



AMERICAN VETERINARY REVIEW

EDITED BY

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AMERICAN VETERINARY REVIEW

APRIL, 1907.

EDITORIAL.

EUROPEAN CHRONICLES.

PARIS, FRANCE, Feb. 15, 1907.

AMERICAN VETERINARY EDUCATION.—Our esteemed collaborator and friend, Prof. W. L. Williams, of the New York State Veterinary College, has presented the readers of the *Veterinary Journal*, in the December issue of this excellent contemporary, his maiden communication as co-editor for the United States of America, and his efforts must no doubt have proved of great interest to the English readers, who have found in the article facts relating to veterinary education in America which must have given them abundant matter for serious thought.

The text of the article of Prof. Williams is indeed on that important subject, and I am sure that veterinarians of North America, and especially those who are engaged in teaching, will gain much by it, in studying it and probably benefiting by it. The Professor is very severe, and tells very hard truths, but he intends "to avoid the drawing or suggesting of any conclusions, leaving these to the reader." This is very unfortunate, because, after showing so accurately where the faults are, where the evils exist, good and daring surgeon as he is, his suggestions for treatment would undoubtedly have been taken in high consideration and made many advocates who would have brought out the

changes that will impose themselves in the eyes of all those who will be his readers.

In introducing the subject, the editor of the *Journal* says: "For years, the enthusiastic and energetic editor of our contemporary, the AMERICAN VETERINARY REVIEW, has been urging the question of educational reforms in professional teachings as the quickest and surest way to obtain social recognition, and it must be somewhat gratifying to Prof. Liantard to find that the American Veterinary Medical Association and the Bureau of Animal Industry, together with the Army officials, are at last taking the matter up"

While I thank the editor of the *Journal* very warmly for the compliment, and appreciating the action of the bodies referred to, I must say that from what I know and certainly from the article of Prof. Williams, I am still more convinced that the reforms that I have urged on so many occasions are to-day more urgent than ever. Heretofore the defects of our education in America were known only by us. Williams has done more, he has done better than I, in pushing them forward; he has shown them to the world at large, who will watch for the next step!!

* * *

Prof. Williams begins by telling how veterinary colleges had their origin, and how the creation of agricultural colleges was, so to speak, the initial stimulus that gave them birth. "These colleges were promptly organized . . . and in most of these, veterinarians were employed to give instruction . . . these veterinarians were drawn almost wholly from Great Britain, and were men of high attainments." The Professor might have added, they were also the initiators of the gratuitous advice in sporting and agricultural papers in the opening of the "Veterinary Editor" columns of those papers. However, it may be so; the several connections that the Professor has had with agricultural schools must be sufficient evidence that his information is correct!! He tells us how the first private schools were given their start and how, "launched on tempestuous seas, some of them were soon, hopelessly wrecked,

others led a precarious existence for a time only, to decline and later perish, while a few continue to exist . . . ;” and, after criticising rather severely those undertakings, he says: “Aside from these incentives, some have certainly sacrificed personal welfare and labored zealously for the advancement of the profession, without material recompense, but on the whole probably the private colleges and their faculties have given to the student not more than that for which he had paid in the form of tuition” . . . “virtually the private veterinary college must prove a financial success or it must close its doors. Sentiment cannot enter very deeply into the question.”

Prof. Williams advances an opinion, which I am sure has gone beyond his thoughts; if he looks round him from forty years ago to date, he will recognize his mistake. The time has not always existed when salaries varied as to-day between \$1000 and \$4000 with pension to widows afterwards.

Sentiment may some times induce daring acts, foolish if you wish, but yet if failure follows it should command respect and admiration rather than deserve sneers.

* * *

And now we are entering into the living part of the article—the consideration of the schools now in existence. First, the Professor makes a sweeping distinction, the *State* colleges, those that are receiving State or Governmental aid (probably those where salaries varying from one to four thousand are paid), and the private colleges which depend upon tuition, are conducted by a private party or parties, even though technically affiliated with a University (and which, I suppose, are those doomed to close).

A chart explanatory of all those colleges gives also a comparative criticism of the working of all those establishments. It is very interesting to consult and gives to the reader valuable material for consideration.

Indeed, we find that 22 colleges are the subjects from which the Professor has obtained the element for his remarks. It is stated that in these colleges there are or were 2040 students. Of

these 194 belong to four schools where high requirements are exacted for matriculation, and among these four schools one grants *free* scholarships. As the total number of students to the state schools is only 621 altogether, there remain 427 for the other state colleges. It must also be observed that of those state schools, there are three where students are received free and that at those three institutions only 222 students are recorded. Therefore, taking from the whole number of students, 2040, the 621 of the state schools, it leaves 1419 for the other eighteen colleges, which for matriculation demand a common school education only.

It is also peculiarly interesting to read that out of the state colleges, there are four where no high school education is required and that they figure with 414 students out of the whole number, 621. As a general *résumé*, out of 2040 students who are in our schools at present, only 246 are possessed of a high school education. *Rather a poor showing!!*

There are also some well prepared exhibitions of the division of the curricula in the 22 colleges. I will only take a few items to show the necessity of the reform so often asked for. For instance, under the heading of "total medicine group," 368 hours are required at the Iowa State College and 212 at the United States College of Veterinary Surgeons in Washington, and between these figures all the other colleges vary. In the "surgical group," 404 hours are given at the Philadelphia college and only 96 at the New York-American Veterinary College. In physiology, the number of hours vary between 170 and 48. In obstetrics between 72 and 34. In anatomy between 216 and 96. The clinical teaching varies between 364 hours and 144, and so on for all the various departments which are found in some schools and not in others. A general *résumé* of the number of hours fills the last column of the chart, giving the total number of an entire course. It varies between 4,704 for the Veterinary Department of the Ohio State College and 1,392 for the Indiana Veterinary College. The Laval School of Canada is credited with only 540 hours.

After this instructive chart, Prof. Williams passes in review the organization of some of the schools, with the State colleges leading, of course. He then makes an exposition of the teachings of the announcements, of the requirements for admission, of the temptations and calls for patronage, etc. A rather queer conclusion might be drawn by a badly disposed reader, when noticing what is written of the Chicago College; he finds that school with 304 students—in fact, the largest class of all the colleges, with the Kansas City College credited with 280, while a free institution like the New York State Veterinary College has but 88, counting the free students!!!

The solid part of the article concludes in giving the percentage of alumni engaged in different lines of work, according to the statistics gathered from the various colleges.

As the table does not say anything about the work done by the alumni of the original "American veterinary college," I may be allowed to recall that in 1897 the records of the 600 graduates of that institution were: 34 who were or had been engaged as teachers and investigators, 63 who were or had been members of the Bureau of Animal Industry or engaged in sanitary work, 8 were or had been in the Army. Of course, I understand that the A. V. C. no longer exists as one institution, but it might have been but fair to present the work of the two private institutions which to-day form the Veterinary Department of New York University, which the pen of Prof. Williams seems to have absolutely overlooked, even if the article had for its main object the consideration of conditions as they exist at the present time.

* * *

And now what can be the conclusions, after reading this severe criticism? To my mind, it must be that Prof. Williams has done well in showing the deficiency of the veterinary educational system in America; he has done it in telling the bitter truth, and while at the end he cautions the foreign reader not to conceive a too poor opinion of American veterinarians because of the defects in our schools, and, while he also points out the

actions of the Bureau of Animal Industry, of the Army and of the American Veterinary Medical Association, he terminates in calling upon that last organization for reforms—reforms which I have urged so often, and which the mass of veterinarians in America feel are essential. Prof. Williams gives us to understand that the National Organization is disposed to ask for them. I hear that the Association of Veterinary Faculties is preparing a report in favor of action; let us all hope that the article in the *Journal* will have for effect to help us to see all those defects wiped out and that all the schools will at an early date adopt the following regulations:

Similar matriculation requirements;

Similar length of attendance at college;

Similarly regulated curricula, with similar mode of graduation;

Similar title or degree, that of Doctorship.

Until these are accomplished, severe criticisms like that of Williams or those of Continental writers, as I have already mentioned, will have to be expected and will be deserved!!

* * *

SIMIAN ANTISYPHILITIC SERUM.—“Syphilis, one of the greatest causes for anxiety that weighs on man’s mind and that of which he speaks only with hesitancy, is said to be about to disappear, thanks to our inferior brethren (?) which will be sacrificed on the altar of science, which in this instance is so close to the altar of love!”

These remarks, made by one of our writers here, came back to my mind while lately making a friendly visit to Pasteur Institute, and when I was reminded of the case of that poor “Edwige,” to whom Dr. Metchnikoff had inoculated the infamous virus from which she died, possibly also with a feeling of shame?

Guinea-pigs and rabbits are ordinarily the objects of bacteriological experiments. Monkeys have the privilege and the honor of the specific treatment, as being the animal nearest to

man and the most proper to come nearer to him in the development of the disease. It is for that reason that Dr. Metchnikoff has resorted to the use of monkeys for his investigations and on that account those animals are assuming at present much interest for their participation in those delicate studies and in the preparations whose incalculable results may mean for humanity its own salvation !

Let the bacillus of syphilis be discovered, let the one which is spoken of be the source of all the moral and physical disasters that we all have read and heard of, then a specific serum will soon be found ; and it is from monkeys that it will be obtained and from them alone, at least with the extent of our present knowledge !

But how will those animals be found in sufficient quantity to allow the preparation of this saving agent so essential for our imprudent humanity ?

* * *

At present our laboratories are provided from menageries or by purchases from sailors or from firms dealing in those animals. Unfortunately, while guinea-pigs and rabbits reproduce rapidly and in great number, it is not so with monkeys. With them the function progresses very slowly and requires minute care. It is better to buy them than to breed and raise them. Small, they cost five or six dollars, when of reduced size. Those of medium dimensions go up to \$20 and \$30. To get them of the size of "Edwige," one must pay between \$200 and \$300. Small and medium sized monkeys, when killed, give only half a glassful of blood, scarcely enough to make 30 or 40 cubic centimetres of serum. Every human patient would need 20 to 25 cubic centimetres, or say two monkeys for three patients ! What a hecatomb in perspective !

All species can be used for experiments, but the nearer to man they are, the nearer the experimental disease given to him resembles that of man. For that reason monkeys are preferred to the exclusion of guinea-pigs and rabbits. Besides the fact of their being costly, there are other difficulties in the way. They are

malicious and ugly. They get angry, are ready to fight always, and much care is required in handling them or one is likely to be badly bitten. The hand covered with a steel glove is a precaution that must not be neglected. I was shown a Rhesus which was peculiarly bad and ugly. He seemed to know all that took place in the room; he glanced with anxiety and followed with angry eyes every step of people moving around him, and he seemed as guessing their intentions. This instinct is general with all. They seem to feel that one day or another they will be operated upon, and when one is about to be removed for the sacrifice they gather all in one corner of their cage, make themselves as small as they can, want to be concealed, not to be found, keeping quiet and silent in great contrast with their usual custom of screaming and jumping as they do.

Yet, if monkeys are essential for the preparation of an anti-syphilitic serum, they will have to be obtained, should the entire population of monkeys all over the world be condemned to be annihilated and disappear. But, then what after?

* * *

THE FAILURES OF TUBERCULIN are known to all who have had occasion to use it, and I have already made allusion to the experiments that have been made and the means that have been recommended to avoid them. The subject has been recently the object of a communication made by Prof. Lignières before the Société Centrale in Paris, while the Professor was enjoying his vacation.

First of all, Lignières acknowledges the great value of this means of diagnosis, infallible with naturally tuberculous animals that have never been tuberculed or that have not been for thirty days.

Failures of tuberculin are rare, but they still exist, and for a long time means to avoid them have been looked for. Hyperactive tuberculin is not practical. Malm has proposed massive injections of tuberculin to promote a reaction in animals, which had been tuberculed inside of thirty days

previous. Vallée, with the same object, has proposed the injection of double doses of tuberculin, and recommended the taking of the temperature every two hours from the time of the injection. Prof. Arloing has also studied the question.

For the speaker, all these methods are uncertain, as it is possible to accustom tuberculous animals even to elevated doses and prevent all reaction. The failures of tuberculin are observed in extensively tuberculous animals, but in these cases the clinical examination will be sufficient for a diagnosis, and one must never allow himself to be misguided by the indications of the experimental inoculation.

If naturally tuberculous animals may not react, failures are still more numerous with bovines infected experimentally. This is an important fact which is known by all who have been interested in the study of immunization against tuberculosis. It is a point which must not be overlooked, as if preventive inoculation was becoming generalized, it is possible that the lesions created by the vaccine, latent and slow to develop, might not be detected by tuberculin. The fight against tuberculosis by vaccination and the use of tuberculin would remain incomplete.

In conclusion, on account of the failures of tuberculin which it is not possible to avoid, this agent can no longer be considered as the most perfect means of diagnosis of tuberculosis, but to it must be added all the indications given by the clinical examination.

Such an éclatant assertion made by one who lives in his laboratory, who is a confirmed bacteriologist, will certainly be gratifying to the practitioners, who might have thought that no diagnosis would any longer be accepted, when made with physical signs and ignorance of tuberculin!

* * *

COLICS IN HORSES.—It was towards the end of 1903 that I mentioned in these pages the appointment of a Commission on Colics, which had been made at the Société Centrale to consider and study all the documents which had been sent to that

society, in consequence of the discussions which had repeatedly taken place at its meeting.

Papers were in large numbers and their examination was a tedious work, no doubt. At last the Commission has been able to make its report.

The papers were classified, and, according to their value, taken individually for consideration.

In a first category were those that treated of the etiology of colics, and in a second those that were related principally to the therapy of colics.

On the subject of the etiology, six papers were entitled: "Hygiene and colics in horses," "Contribution to the study of colics," "On the most frequent causes of stomachal and intestinal indigestion observed in artillery horses," "Influence of social, economical and agricultural disturbances upon the mortality among army horses from affections of the digestive canal," "Effect of overwork and of functional alterations of the liver in the etiology of colics," "On the pathogeny of the colics of army horses."

Four papers only treated of the therapeutics: "Colics of horses and their treatment," "Mixte refrigeration in the treatment of intestinal congestion of horses," "Note relating to the use of pilocarpine and eserine," "Opium in the treatment of colics of horses."

From this long list of articles, it might have been supposed that something exceptional might be derived from the careful analysis made by the Commission. Was it so?

Perhaps some new points have been brought out in relation to the etiology, and yet when one author accuses too much work as a cause of the trouble, another writer says: stabulation and too much rest are doing all the mischief. For this one, it is a peculiar *régime*, a special diet, too much of this or of that food, and then another gives an entirely different conclusion. And when it is a question of the therapy, here it is perhaps worse. For one alkaloids are the thing, for another they are not. Much, however, is said of the sedative, soothing, calming therapy, and

for many opium is the proper agent to use. It has been quite strange to me that in no instance have the authors said one word in favor of chloral hydrate! Is it that French veterinarians do not use it?

In conclusion, no new light has been thrown on the subject, wide and important as it is. The Commission is still kept up to follow the consideration of other documents, if any more are coming!

Of course they will.

* *

THE ALMOST HUMAN HORSE.—Some two years ago the scientific world of Germany was for a moment much agitated with the wonderful performances of the "Miracle of Nature," as he was called, a learned (?) horse, better known as "Hans." Was he of German origin? I do not know, but he exhibited his superior qualities in Germany, his master was a German, he understood German, and a commission of German scientists was appointed to scientifically study this wonderful subject. The commission has never reported.

Of course, not to be backward in this line, England has recently had another wonder in the equine race: it is the "thinking horse," "Princess Trixie!" She has received special education and is said by her owner to possess the power of responsive intelligence which is equivalent to that of an average child of six years of age. I am not acquainted with any of the proofs she may have given of such superiority over other animals of her kind. But as she is American, that when she came to England she understood American money, and could calculate in dollars and cents, and since she knows as much in English shillings, it cannot be wondered at that she has already made rapid progress in German, so as to be prepared to be presented to the German Court, where her owner has been conveyed in her company.

Through the professional journals of England, I read that the following committee has been appointed to study her case and decide the vexed question relating to the charming "Prin-

cess": Lord Decies, Sir Edmund Loder, Bart., Sir Edward Ward, K.C.B., Sir Martin Conway, Dr. Chalmers Mitchell, D.Sc. (Secretary to the Zoölogical Society), Dr. F. S. Batten, M.D., F.R.C.P., Colonel Benson, Major Meredith (1st Life Guards), Captain Nicholas (Superintendent of the Royal Mews), Captain Simpson, Mr. R. Craig McKerrow, Mr. R. Innes Pocock (Superintendent of the Zoölogical Gardens), Mr. Arthur J. Coke (Secretary of Our Dumb Friends' League), Mr. James Simpson, F.R.C.V.S., Mr. W. Mulvey, F.R.C.V.S., Mr. F. Hobday, F.R.C.V.S., F.R.S.E., Mr. W. Bower, M.R.C.V.S. (Veterinary Surgeon to H.M. the King's Racing Stud), Mr. F. H. Ridler, M.R.C.V.S., Mr. E. K. Robinson (editor of *The Countryside*), Mr. A. E. Gostling, M.R.C.V.S., Mr. W. Willett, M.R.C.V.S.

It is gratifying to see the names of so many well-known veterinarians in such good company. But it would be funny, if this turned out another "Hans" affair!

* * *

BIBLIOGRAPHY.—I have received from the house of Bailliere, Tindall & Cox, of London, a copy of a little work entitled "*Notes on Blood Serum Therapy*," by Walter Jowett, F. R. C. V. S., D.V. H., formerly demonstrator of comparative pathology and bacteriology in the University of Liverpool. The book is written for veterinary practitioners and students. Containing 200 pages and 47 illustrations, the contents are divided into five chapters, the first on immunity, the second on the methods of conferring it, the third on the diseases due to ultravisible viruses, the fourth on diseases due to protozoa and the fifth treats of toxins and serum diagnosis. There is also an appendix giving weights and measures, one on notifiable diseases, then a general bibliography and references, with a few notes on the occurrence of spirochætæ in equine canker and grease. This little volume, although it seems a compilation from the works of many investigators, is a valuable acquisition for the lucid description given by the author, and it will prove to practitioners and students most interesting and valuable. The explanation of Metchnikoff's theory, of the Erlich and

Opsonic theory are plainly brought to the understanding of the reader. The various methods of conferring immunity receive a very good consideration and the diseases of the ultravisible viruses and those due to protozoa are referred to according to the most recent researches. The preparation of tuberculin and of mallein, with the agglutinating and precipitating tests receive also a very lucid consideration. As a whole, the book is interesting, instructive and is deserving of warm recommendation. The American publishers are W. T. Keener & Co., of Chicago, from whom it may be obtained.

* * *

In May, 1905, I reviewed the first part of the "*Manuale di Anatomia Comparata Degli Animali Domestici*" (Manual of comparative anatomy descriptive of the domestic animals), by Doctor Teresio Mongiardino, Professor at the Superior Royal Veterinary School of Turin. To-day it gives me much pleasure to notice the second volume of the work. I have already said how good the first volume was and what a valuable acquisition it was to Italian veterinary literature. I could say no more while speaking of the closing part of the work, except perhaps that it is superior. Made of over 500 pages and illustrated with 272 plates, original or reproduced from the classical work of Chauveau, to which due credit is given, the book of Dr. Mongiardino is written in a manner which renders its reading less tiresome than most works on the same subject are and its arrangement is such that any one interested in reviewing anatomy will certainly read it with great relish. This *vade mecum* is certainly an excellent work.

* * *

Among other sundries coming from America which are on my desk, I am pleased to mention: The *Chicago Veterinary College Quarterly Bulletin*, that of the Kansas Veterinary College, Bulletin 89 of the Agricultural Experiment Station of Louisiana, with the article from Dr. Dalrymple on "Nodule Disease of the Intestines of Sheep," the rules and regulations of

the State Board of Veterinary Examiners of Tennessee, and finally from my friend and scholar a kind invitation to the meeting of the Ohio State Veterinary Association, for which I send him my thanks and regrets to not have been able to attend. In closing, I have just opened my last mail and find a pamphlet from Dr. A. Pirocchi on "*Altre esperienze sulla durata della digestione nei bovin*" (other experiments upon the duration of digestion in bovines).

* * *

OBITUARY.—It is my sad duty, in closing this chronicle, to record the death of two veterinarians whose names are known all over the world and whose professional works will forever remain spoken of in veterinary and scientific societies.

Professor Thomassen, of the Veterinary School of Utrecht, Holland, died in December last from hæmorrhage, which carried him off at the age of 59. A man of great talent and one of the most learned teachers of the School of Utrecht, the veterinary profession owes to him two important discoveries: the efficacy of the treatment of actinomycosis with iodide of potassium, and the pathogenous microbe of infectious enteritis of calves.

Professor Thomassen held the degree of Doctor of Medicine, granted *honoris causa* by the University of Gröningue.

Hardly had Holland lost Thomassen, one of her most illustrious sons, than Belgium in turn paid her debt to the death roll in losing Dr. L. Wilhems, who died at the handsome age of 85 years. The veterinary profession owes him an everlasting tribute of honor for his discovery of the preventive inoculation of contagious pleuro-pneumonia of cattle, which has been practiced all over and in every country where this disease prevailed, with more or less success, and which has even to-day many advocates and admirers. Of course, the Wilhems method as practiced to-day is no longer that preconized by the veterinarian that Belgium mourns.

A. L.

WHAT THE AUTOMOBILE HAS DONE FOR THE HORSE.

At the close of the last century and the beginning of the present one the automobile began in earnest to retire the horse from all service and companionship of man, and the automaniacs declared with a confidence worthy of better judgment that the length of time it would require to accomplish his total disappearance was in direct proportion to the ability of the manufacturers to turn out motor vehicles to take his place. The more enthusiastic of the automaniacs ventured the prediction that no museum of natural history of the next generation would be complete without a properly mounted skeleton of the horse, in order that our progeny may know of the dark age when this creature was the servant of man, universally used to draw the pleasure carriages and bear the burdens of the denizens of the earth prior to 1900, while our forefathers and mothers actually rode upon their backs in the delusive pursuit of health and happiness.

Always striving to be a faithful chronicler of the progress of events which have a bearing upon our profession, the REVIEW has watched with interest, though not with confidence, the fulfillment of these bombastic predictions, and it finds much food for thought and reflection in the report of the Secretary of Agriculture of the United States Government, which has just been issued. As showing just how the new industry is accomplishing its rather large undertaking, the report is not only instructive, but it is prophetic. It is true that a decade has not yet elapsed, but seven-tenths of one has, and it is well to take account of stock as we go along.

At the time the extinction of the horse began there were, according to official figures for the beginning of 1900, 15,624,000 horses and mules in the United States, valued at \$715,787,000. On January 1, 1907, they had increased to 23,564,000 valued at \$2,274,642,000—or an increase in numbers of about 8,000,000 (about 50 per cent.) and a rise in value of \$1,558,855,000 (about 112 per cent). Remarkable as these statistics appear

for the period under consideration, the figures for the years 1905 and 1906 are bewildering, for in the *four* years immediately following the advent of the automobile, the value of these animals only advanced \$736,363,000, while in the last *two* years they have risen \$822,492,000.

Nor can this condition be explained away upon the ground that the great increase in population has made the growth of horses only apparent, for a study of the industry since the middle of the last century will show that they have increased in greater proportion than have the human inhabitants. When the seventh census was taken in 1850 the population of the United States was 23,192,000, and there were 4,894,000 horses and mules in the country, or one for every 4.75 persons (about one-fifth as many horses as there were people). Since that time the horse has been displaced by motive power in some of his chief employments. He was then almost the sole means of transportation on land, and even the canal system gave him work in drawing its boats. There were in those days less than nine thousand miles of railroads in the United States, while today the country is gridironed by about a quarter of a million miles of their tracks, there are thousands of miles of electric street railways, to say nothing of 100,000 or more automobiles which have been thrown in his pathway to hurry his extermination. A conservative estimate of the population of the United States at the present time is 87,000,000 people, and, as above shown, 23,564,000 horses and mules, or one for every 3.66 persons (more than one-fourth as many horses as people). And in the light of the rapid growth of these animals in the last two years, they are increasing very much greater in proportion than the human population. With all this, the supply is not commensurate with the demand; for important dealers declare that the task of keeping their stables stocked is becoming more difficult every day.

While the soliped has eclipsed all records in the history of the world, the American mule has more than held his own in the general advance, for while his total value was \$251,840,000

in 1905, in two years it has leaped to \$428,064,000, a sum estimated by the well-informed New York *Herald* to be "greater than the value of all the automobiles in the country, including \$100,000,000 worth now on the scrap-heap;" and the same authority further states that "it will keep the motor busy to catch up with the long-eared hybrid whose top note so resembles its own."

In view of the satisfactory condition of veterinary practice, and the solid and safe position of our chief patient, the profession can complacently watch the profligate expenditure of printer's ink through the medium of which manufacturers of motor vehicles are endeavoring to convince the public that they are closing the career of the horse. But in the meantime, should purse-strings tighten through financial or commercial stringency, what a balloon would burst in Broadway!

THE EXISTENCE OF RABIES.

In the face of absolute scientific evidence of the alarming increase of rabies in many sections of the United States, it is revolting to observe such utterances as are contained in the following letter from Mr. George T. Angell, editor of a paper called *Our Dumb Animals*. We believe that Mr. Angell is the head of a society in Boston to prevent cruelty to animals, but the display of wilful ignorance which he makes in the face of overwhelming scientific evidence of the extensive prevalence of this loathesome and deadly disease is unpardonable, and stamps him as unfitted to hold any position where such sentiments as he expresses may lead to the sacrifice of valuable human and animal lives. The positive proofs which are daily given by the agonizing deaths of human beings and all species of animals; the laboratory proofs of reproducing the disease by inoculation of the virus from a rabid dog to guinea-pigs, rabbits, dogs, and other small animals; the entrance of a mad dog into a barn where horses and cattle are bitten and afterwards become affected by the same disease; and many other circumstances

sufficient to make it a positive proposition to a sane mind, have no power to convince such men; they will not see; they prattle in the same old strain that maintained some years ago before science laid bare the most convincing evidence of its existence and prevalence. Then, the only way to treat such fanatics is to cast them out of the public view, or to muzzle them at the same time that the dogs are. Mr. John P. Haines, of the New York branch of the American Society for the Prevention of Cruelty to Animals, gave voice to similar "opinions" a few years ago, but he is effectually quieted by being relieved of a trust which his *confrères* openly charge was mismanaged upon a large scale, and we respectfully recommend the same course with his Boston brother. The question is no longer susceptible of two interpretations; the evidence is positive and repeatedly produced; patience with such sloths is out of argument.

The following is Mr. Angell's letter, which appeared in the St. Paul (Minn.) *Dispatch* of March 2:

"We have received some very painful letters on the above subjects, to which we can only answer that we have been doing all we can for the protection of dogs, and wish we could do a great deal more. During the past more than thirty years we have been called many times to the State House to oppose their muzzling, and have never failed in a single instance to convince the committee that there was no need of muzzling. We have at different times had various cases of alleged rabies investigated by our officers, without finding in a single instance evidence to warrant a belief in its existence. Dr. Charles W. Dulles, of Philadelphia, professor in the Pennsylvania University, and an eminent physician, was appointed by the Pennsylvania Medical Society many years ago to investigate the subject, and has ever since given more attention to it, perhaps, than any other man either in Europe or America, and is convinced that cases are so extremely rare as to make it doubtful whether it is anything more than a disease of the imagination. In all the great collections of dogs in this country and Europe, we think not a single instance can be found where any animal or human being in charge of these animals has had the disease. In Constantinople, where thousands of poor vagrant dogs wander in the streets, there was never an instance known. But

since this Pasteur business has become so prominent, the reported malady seems to have terribly increased. Very soon after Pasteur's alleged discovery, the cases, we understand, became quite numerous in France, while in Germany, just across the Rhine, they were almost unheard of. We have no doubt that dogs, like human beings and horses, may be liable to epidemics, but whether those epidemics have anything to do with rabies is another question. Dr. Dulles thinks all these Pasteur institutes are of no use, except to put money into the pockets of the doctors who are connected with them.

"Of course we are not competent to decide this matter, but we are strongly of the opinion that if Pasteur had never lived and performed his numerous experiments on living animals there would be no more need now of muzzling dogs in America than there was in the hundred years before this vivisector was ever heard of."

"THE REVIEW gets better with each issue."—(*George R. Young, D. V. S. Omaha, Neb.*)

"THERE is but one serious fault with the REVIEW—it should come weekly instead of monthly."—(*W. V. Lusk, Vet. U. S. Army, Fort Assiniboine, Mont.*)

BUREAU OF ANIMAL INDUSTRY INSPECTORS are much pleased with the change of their title from "Meat Inspector" to "Veterinary Inspector," as it is more comprehensive and dignified.

COLORADO is having the usual experience of states with new veterinary laws: A bill has been introduced in the Legislature to compel the Board of Veterinary Examiners to register, without examination, "any person who has been in continuous practice of veterinary surgery, veterinary dentistry, or veterinary medicine for a term of ten years or more in the State of Colorado . . . upon such person establishing such fact before the Board of Veterinary Surgeons by the testimony of twelve or more reputable and competent witnesses and upon paying like fees as in other cases. The person so licensed shall be *known and deemed in law a veterinary surgeon.*" A very vigorous protest has gone up from the veterinarians, and many have appeared before the committee of the House to which the bill was referred. Among the most forceful of the objectors was Mark White, of Denver, who is as energetic in such matters as his Tennessee brother, George R. White.

ORIGINAL ARTICLES.

NEUROTOMY IN THE HORSE.

BY DR. THEODOR SCHMIDT,

First Assistant of the Surgical Clinic of the Royal Veterinary High School in Vienna.

TRANSLATED FOR THE REVIEW BY DR. A. T. PETERS,

Professor of Animal Pathology in the University of Nebraska, Lincoln, Nebraska.

The above subject has for many years been discussed by a great number of authors, so that a complete literature already exists on this phase of veterinary surgery. I cannot tell my colleagues much that is new, but I believe I should publish my own experiences in private practice from 1898 to 1904 and then in the surgical clinic at Vienna; for, with an abundance of material, many interesting observations were made, and many of the horses operated on remained under professional control for a long time (up to six years), as is more practicable in private practice than in the clinic, where very often (at least with us at Vienna) the patients after leaving the hospital are not seen again.

I should like to mention, also, that I performed the operations with my colleague, Franz Starzinger, Vienna, who assisted me in the more difficult surgical cases as counsel, so that I operated in a great majority of cases with his assistance. In a part of the cases he operated with my assistance.

We were greatly aided by a simple operating table constructed by Starzinger. This permitted a great saving of assistants, two men being sufficient, and at the same time a perfectly safe fixation of the extremities, with more cleanly work than a heap of straw would allow.

My colleague, Starzinger, to whom was left the further treatment of the patients in his clinical stables, also spared no pains, which I should like to emphasize, to keep and to control the cases in evidence.

A large portion of the cases I have, myself, been able to see again and study several years after the operations.

Since I present the cases in the form of short histories, wherein are noted the most important data concerning the diagnosis, operation, recovery and other observations, I should like to mention that most of the horses had already been treated for a month previously without success, so that in very many cases in consequence of their disability for any kind of service, their value was reduced to that of their flesh.

On the anterior limbs nerve resections were performed on 96 horses, with 167 single nerves, as the following table shows :

	<i>Horses</i>	<i>Nerves</i>	<i>Remarks</i>
Left median and ulnar nerves	40	80	
Right median and ulnar nerves.....	16	32	
Right median nerve.....	20	20	
Left median nerve.....	13	13	
Both right and left median and ulnar nerves.....	1	4	Case 74 at one time on both limbs.
Both right and left median and ulnar nerves.....	1	4	Case 7, interval of 6 weeks.
Right and left median nerve.....	1	2	Case 23, interval of 4 months.
Right median nerve, left median and ulnar nerves	1	3	Case 82, at one time.
Right median nerve, left median and ulnar nerves	1	3	Case 87, interval of 6 months.
Left volar nerves.....	1	2	
Left volar nerves and then the median and ulnar nerves	1	4	Case 22.
Total.....	96	167	

If I add the cases operated on while I was connected with the Surgical Clinic of the Veterinary Institute from 1893 to 1897 and after I again entered the Veterinary High School (1904), the number of horses on the anterior extremities in which I have performed neurotomies amounts to about 120.

If we group the cases according to the diagnosis, first on the right anterior extremity, 8 times on account of thickening of the flexor tendon, 6 times on account of thickening of the flexor tendon, and a moderately contracted position, 6 times on account of ringbone.

ANTERIOR EXTREMITIES.

No.	Description.	Diagnosis.	Pre Treatment.	Day of Operation.	Remarks About Operation.	Course of Operation.
1	6 years old. Light road horse. Gelding.	Exostosis on left ankle, lame when bought.	Blistered.	Dec. 18, 1898.	Left median nerve. Healing by first intention with slight swelling. Placed in service after 14 days. Not lame.	Extensive growth of wall of hoof on the operated limb. Had to be destroyed after two years.
2	13 years old. Heavy draught horse. Mare.	Ringbone on left coronet. One year standing Very lame.	Blistered a number of times without results.	March 24, 1899.	Left median nerve. Healing by second intention. Allowed to work after 3 weeks. Not lame.	Had to be destroyed after one year.
3	6 years old. Driver. Mare.	Chronic periostitis at right ankle.	Blistered.	June 6, 1899	Right median nerve. Healing normal. Working after 3 weeks. No lameness.	Results not known.
4	7 years old. Light driver. Mare.	Ringbone on left ankle. When trotting very lame.	Blistered. Puncture fired. Blistered. No results.	June 15, 1899.	Left median nerve Healing by first intention. Working within 14 days. Not lame.	Irritation (?) The wall of the hoof became hard, rough, and brittle. After one year's good service a large penetrating crack appeared on upper hoof, which, through the carelessness of the owner became inflamed. Sloughing of the hoof. Had to be destroyed.
5	5 years old Light driver. Mare.	Chronic periostitis at right pastern joint.	?	June 15, 1899.	Right median nerve. Healing by second intention, great swelling of the extremity. Put in service 3 weeks after the operation. No lameness.	Unknown.
6	7 years old. Light driver. Mare.	Chronic periostitis of the left front pastern.	Blistered.	July 29, 1899	Left median nerve. Healing by first intention. Lameness.	Two years after the operation, distinct enlargement of the os sufraginis. Free motion at the fetlock joint. Hyperæsthesia in the extremity operated on. Horse would not allow the limb operated on to be touched.

No.	Description.	Diagnosis.	Pre Treatment.	Day of Operation.	Remarks About Operation.	Course of Operation.
				August 18, 1899.	Left ulnar nerve. In service after 14 days. No lameness.	Good service in carriage up to Jan., 1904. During this time hard gall occurred twice in connection with slight lameness. Sold in Jan., 1904, to be used on a one-horse vehicle, and then in service up to Nov., 1904.
7	7 years old. Light driver. Mare.	Ringbone of the left fore foot. Ringbone of the right fore foot.	Blistered. Blistered.	July 27, 1899. October 9, 1899.	Left median and ulnar nerve. Healing by first intention. Right median and ulnar nerve. Healing by first intention.	In Oct hard gall with loosening of the coronary band. In Nov., 1899, nail puncture, suppurative of the sensitive frog, sloughing of the hoof.
8	8 years old. Light driver.	Chronic peri-arthritis of the right pastern. Lameness when bought.	.....	Sept 5, 1899.	Right median and ulnar nerve. Healing by first intention. In service 10 days after the operation.	In the course of some months there developed on the posterior side of the carpus, considerable exostosis, which after a time again became smaller. After 1½ years of good service the animal was destroyed on account of fracture of the os centrale and os cuneiforme tertium following recurrence of the tibial and peroneal nerve. (See No. 61 under posterior extremities.)
9	16 years old. Driver. Mare.	Ringbone on the left pastern.	Puncture fired blistered.	Sept. 4, 1899.	Left median and ulnar nerve. Injury of the medio-ano-radial vein, tamponed. Normal healing. Discharged Sept. 18. No lameness.	Suddenly during work occurred sloughing of the hoof after 6 days' service, so we were informed. Details not to be learned.
10	5 years old. Light driver. Gelding.	Chronic periostitis of the left pastern joint. Lameness for four months.	Blistered.	Sept. 9, 1899.	Left median and ulnar nerve. Healing by first intention. Discharged after 14 days.	Unknown.

No.	Description.	Diagnosis.	Pre Treatment.	Day of Operation.	Remarks About Operation.	Course of Operation.
11	4½ years old. Light driver. Mare.	Splint (?) on left.	Blistered.	Oct 9, 1899.	Left median and ulnar nerve. Healing by first intention. Discharged after 14 days.	Unknown.
12	12 years old. Light driver. Gelding.	Sidebone on the left coffin joint. Lame one year.	Blistered, puncture fired, blistered.	Sept. 22, 1899.	Left median and ulnar nerve. Healing of the ulnar wound by second intention, exuberant granulations.	No change in the sidebone. Up to Jan., 1904, good service. Destroyed.
13	8 years old. Stallion.	Painful tendon callus of tenotomy of right fore foot.	.....	July, 1899.	Right median and ulnar nerve. Normal healing.	After 3 months' good service the foot was pricked by a nail. This followed by purulent inflammation of the sensitive wall and sole of the foot. Sloughing of the hoof.
14	11 years old. Light draught horse. Mare.	Chronic pastern lameness (?) left fore foot.	?	Sept. 24, 1899.	Left median and ulnar nerve. Healing by first intention. In service 3 weeks after operation.	The horse endured very hard service as a trotter the entire time. Hyperaesthesia of the skin in the extremity operated on. In 1903, destroyed on account of viciousness.
15	10 years old. Heavy draught horse. Gelding.	Sidebone of left fore foot. Lame for one year.	In spite of all treatment lame for one year.	Oct. 4, 1899.	Left volar nerves. Healing by first intention. Healed after 8 days.	Horse still in service in Nov., 1904, at heavy driving work. Hard galls have appeared several times without injury on the hoof operated on.
16	2½ years old. Heavy draught horse. Gelding.	Pastern lameness.	Rest for two months.	Oct. 10, 1899.	Left median and ulnar nerve. Healing by second intention. Exuberant granulations at the place of the ulnar operation.	One year's service at heavy work. Itching in the extremity operated on. Sold after one year on account of bad pulling.
17	5 years old. Light driver. Gelding.	Chronic periostitis on splint and periartthritis on right pastern joint.	?	Oct 10, 1899.	Right median and ulnar nerve. Healing of median wound primary, of ulnar wound secondary. Discharged after 9 days.	In a few weeks a splint developed, in 1902 a quarter crack appeared, but was cured by operation. Animal then sold and lost sight of.

No.	Description.	Diagnosis.	Pre Treatment.	Day of Operation.	Remarks About Operation.	Course of Operation.
18	7 years old. Heavy draught horse. Mare.	Bone enlargement of the left pastern Lame ½ year.	.....	Oct. 11, 1899.	Left median and ulnar nerve. Healed Oct. 24.	Oct. 8 1899, destroyed on account of a large stone falling on the hoof.
19	8 years old. Heavy draught horse. Mare.	Thickening of the left flexor tendon.	Blistered twice.	Oct. 31, 1899.	Left median and ulnar nerve. Healing by primary intention. Discharged Nov. 9.	Good service. In Nov., 1901, sloughing of the hoof following a nail puncture during shoeing.
20	13 years old. Light driver. Stallion.	Chronic periarthritis. Sidebone of the right front fetlock.	?	Oct. 30, 1899.	Right median and ulnar nerve. Primary healing. Discharged Nov. 8.	Horse immediately put to work. After 6 days' service, during severe drive, occurred fracture of right anterior os sufraginis. Examination revealed an entirely new splintered or comminuted fracture. No trace of a preëxisting fissure.
21	10 years old. Light driver. Stallion.	Ringbone of left fore foot. Very lame.	Puncture fired without result.	Nov. 9, 1899.	Left median and ulnar nerve. Primary healing. Healed Nov. 20.	Destroyed in June, 1901, on account of fistula of the coffin cartilage in the operated foot.
22	7 years old. Light driver. Gelding.	Ringbone of the left front fetlock.	Fired, blistered. No results.	Nov. 14, 1899.	Left volar nerves. Primary healing. Lameness unchanged. Second neurotomy of the median, lameness. Third, neurotomy of the ulnar nerve, with success.	Three months' good service. Then after a leap over a ditch, partial rupture of the flexor tendon of the coffin bone. Destroyed.
23	12 years old. Heavy draught horse. Stallion.	1. Thickening of the tendon of the right fore foot. 2. Thickening of the tendon of the left fore foot.	Line fired. No result. Line fired. No result.	Nov. 27, 1899 April 7, 1900.	Right median nerve. Primary healing. Left median nerve. Primary healing.	Good function. Sold in 1901.
24	7 years old. Light driver. Gelding.	Chronic periarthritis on the inside of the right pastern joint.	Blistered.	Dec 14, 1899	Right median and ulnar nerve. Primary healing. Discharged Dec. 24.	After 9 months oblique fracture of metacarpus of operated extremity in upper third on rising in stall. In a few days suppurative swelling from hoof to above carpus.

No.	Description.	Diagnosis.	Pre Treatment.	Day of Operation.	Remarks About Operation.	Course of Operation.
25	Stallion. 5 years old. Heavy draught horse.	Moderately painful. Thickening of the flexor tendon. Swelling of the os sufraginis, a more vertical position of the same bone of left fore leg. Lane for several months. Sores. Proposed to use him no longer.	.....	Dec. 2, 1899.	Left median nerve. Healed by first intention, Dec. 10. Discharged at once.	1. One year after the operation superficial hard gall, causing slight lameness. 2. May, 1903, bad nailing followed by lameness. 3. Feb. and March, 1904, fistula of the alar cartilage in the limb operated on, followed by recovery. December, 1904, still in service. It is interesting to note that there is present the throwing motion of the foot as in contracted hoof. The hoof in the carrying portion is very wide, a diminished growth of horn is present.
26	Gelding, 10 years old. Light wagon horse.	Swelling of the left anterior fetlock.	Blistered.	Jan. 18, 1900.	Left median and ulnar nerve. Abscess on the ulnar scar. Discharged Feb. 1.	In the beginning of 1902, contusion of the sole on account of shoe being short. Phlegmon, sloughing of the hoof threatened, animal destroyed.
27	Gelding, 5 years old.	Chronic periarthritis below the first carpal joint (jerk of left hind foot).	Blistered.	Jan. 27, 1900.	Left median and ulnar nerves. In use since Feb. 10.	Immediate operation on the left hind foot (tenotomy of the lateral extensor). Complete result. Sold after one month. The new owner drove the horse three months, then sold him to the horse butcher since the animal was in his opinion worn out.
28	Stallion, 10 years old. Heavy draught horse.	Hyperostosis of the right anterior fetlock. Lane for two months.	Blistered twice.	Feb. 5, 1900.	Right median nerve. Lameness somewhat less.	After the operation a fairly solid œdema appeared from the coronet to the carpal articulation. 14 days after being placed in service, fracture of the right anterior fetlock. Not studied anatomically. Preexisting fissure?

No.	Description.	Diagnosis.	Pre Treatment.	Day of Operation.	Remarks About Operation.	Course of Operation.
29	Gelding. 6 years old. Heavy draught horse.	Thickening of the right anterior flexor tendon. Vertical position of the fetlock, uniform enlargement of the os sufraginis, considerable lameness, sores.	Blistered repeatedly.	Feb. 13, 1900.	Right median nerve with result.	Tendon thickening disappeared, likewise the enlargement of the os sufraginis. Hoof became wider. Frequently, a hard gall without injury. Dec., 1904, still in service.
30	Mare. 8 years old. Hungarian driver.	Lameness of left anterior coffin joint, oval hoof, rather vertical carrying walls, lame for a long time.	?	March 3, 1900.	Left median and ulnar nerve. Lameness disappeared.	After two months, without known cause, loss of hoof. During the process the coronary band became loosened, bleeding. On the second day a severe œdema up to the middle of the tibia. On the third day, sloughing of the hoof.
31	Gelding. 8 years old. Heavy draught horse.	Painful tendon callus after tenotomy of the flexor tendon of the left the entire length anterior coffin of the tibia was bone. 8 weeks thickened, painful after tenotomy he especially in the was out of service, region of the callus then gradually grew worse.	Five months Blistered.	March 14, 1900.	Left median nerve with result.	After the neurectomy the horse was again serviceable. After nine months he again goes lame, showing thickening and shortening of the tendon. Vertical position of the fetlock. Destroyed.
32	Gelding. 10 years old. Light draught horse.	Thickening of flexor tendon of right fore foot. No contraction.	Blistered.	March 13, 1900.	Right median nerve with result.	Hard gall on the foot operated on, recovery. In the summer of 1904, still in service.
33	Stallion. 9 years old. Heavy draught horse.	Thickening of the flexor tendon of left fore foot.	.....	May 29, 1900.	Left median nerve with result.	Destroyed after three months on account of viciousness.

No.	Description.	Diagnosis.	Pre Treatment.	Day of Operation.	Remarks About Operation.	Course of Operation.
34	Mare. 11 years old. Hungarian driver.	Chronic periarthritis below right anterior "knee."	.....	June 7, 1900.	Right median and ulnar nerve with result.	After very hard usage (often day and night service) sloughing of the hoof in the summer of 1901.
35	Gelding. 6 years old. Light draught horse.	Moderate shortening of the flexor tendon with vertebral foot of the right fore limb, thickening of the os suffraginis. Lameness for one year, unserviceable.	Repeatedly blistered and cauterized.	June 12, 1900.	Right median nerve with result.	Considerable improvement of the contracted position. Horse was always used in heavy driving work (hauling trunks). Gradually there developed a new contracted position. On left fore leg also appeared thickening of flexor tendon and its sheath on account of which the animal was destroyed in summer of 1901.
36	Gelding. 12 years old. Heavy draught horse.	Chronic periarthritis of the left anterior fetlock, hard sidebone palpated, swelling of os suffraginis. Horse unserviceable.	Repeatedly treated. Lameness has persisted for a long time; owner is willing to have animal destroyed. Neurectomy as a last resort.	June 3, 1900.	Left median nerve with result.	Disappearance of all symptoms, so that nothing abnormal is perceived by inspection and palpation. No complications. Dec., 1904, still in service (used in hauling loads)
37	Gelding. 7 years old. Heavy draught horse.	Thickening of the flexor tendon of right fore foot. Very lame. Lame when bought.	?	July 31, 1900.	Right median nerve with result.	16 months in service, then sold.
38	Stallion. 16 years old. Heavy draught horse.	Thickening of the flexor tendon of right fore foot. Slight contraction.	Cautery. Lameness.	Aug. 19, 1900.	Right median nerve with result.	Still in service in the summer of 1904.
39	Stallion. 6 years old. Heavy draught horse.	Ringbone of right anterior pastern joint. Very lame.	Blistered.	Oct. 17, 1900.	Right median nerve alone, without result.	On this account destroyed.

No.	Description.	Diagnosis.	Pre Treatment.	Day of Operation.	Remarks About Operation.	Course of Operation.
40	Stallion. 10 years old. Heavy draught horse.	Thickening of the flexor tendon of right fore foot. Moderate lameness.	?	June 2, 1900.	Right median nerve. Slight decrease in lameness.	Horse sees further service, though lame.
41	Gelding. Gray. 6 years old. Draught horse.	Thickening of flexor tendon left fore foot, slightly vertical position of fetlock, exostosis of os sufraginis.	Line fired and blistered.	Oct. 24, 1900.	Left median nerve with result.	1904 still in use.
42	Gelding. Chestnut. 6 years old. Heavy draught horse.	Thickening of the flexor tendon of right fore foot. Very lame.	Blistered and then line fired.	Oct. 27, 1900.	Right median nerve with result.	1904, still in service.
43	Gelding. Gray. 5 years old. Heavy draught horse.	Thickening and contraction of the superior sesamoid ligament of right fore foot.	Blistered.	Nov. 6, 1900.	Right median nerve. Slightly beneficial.	After 4 months, lameness appeared on the left fore leg and animal was destroyed.
44	Mare. 10 years old. American trotter.	Periarthritis on the right anterior fetlock joint.	Blistered and puncture fired.	Dec. 1, 1900.	Right median nerve. Lameness decreased.	After 6 weeks again very lame. Sold.
45	Gelding. 6 years old. Light draught horse.	Sidebone left fore fetlock.	Blistered, puncture fired.	Dec. 11, 1900.	Left median nerve with result.	.....
46	Gelding. 14 years old. Running horse.	Ankylosis of the left fore fetlock joint. Thickening of the flexor tendon. Very lame.	Repeatedly blistered and cauterized.	Jan. 3, 1901.	Left median and ulnar nerve with result, except the ankylosis of fetlock joint.	After six months of hard use, rupture of the flexor tendon of the coffin bone at the height of the sesamoid bones during a race. Post mortem. The ruptured tendon was completely fibrillated and infiltrated with deposit of lime salts as was also the parietal layer of tendon sheath. Bony ankylosis of the fetlock joint.

No.	Description	Diagnosis.	Pre Treatment.	Day of Operation.	Remarks About Operation.	Course of Operation.
47	Stallion, 6 years old. Trotter.	Periarthritis at the left carpal joint. Thickening of the flexor tendon. Great lameness.	Blistered, fired, without result.	March 5, 1901.	Left median and ulnar nerve. Considerable œdematous swelling that did not entirely subside.	From the œdema caused by operation, a chronic severe form of the disease developed together with a sclerosis of the skin and subcutaneous tissue from coronet to above carpal joint. Chronic skin disease. After one year's service, sloughing of hoof without known cause.
48	Gelding, 14 years old. Draught horse.	Thickening of the flexor tendon of right fore foot. Hyperostosis of the fetlock. Lameness for six months.	Blistered.	March 7, 1901.	Right median nerve. Good result.	Still in service in the autumn of 1904.
49	Black gelding, 9 years old. Heavy draught horse.	Thickening of the flexor tendon of right fore foot. Hyperostosis of the fetlock. Lameness for six months.	Blistered.	March 7, 1901.	Right median nerve. Good result.	Still in service in autumn of 1904.
50	Gelding, 14 years old. Heavy draught horse.	Thickening of the flexor tendon of right fore foot. Hyperostosis of the fetlock. Lameness for six months.	Blistered.	March 25, 1901.	Right median nerve. Good result.	Said to be still in service in 1904.
51	Stallion, dark brown, 10 years old. Heavy draught horse.	Kingbone on the right fore fetlock. Very lame.	Repeatedly treated.	April 15, 1901.	Right median nerve with result.	Nothing known.
52	Mare. Gray. 15 years old. Driver.	Chronic arthritis of right fore fetlock joint, bony enlargement of os suffraginis, fissure. Lameness suddenly 3 months ago.	Twice punctured and bled. Great lameness.	May 3, 1901.	Right median and ulnar nerve upon request of owner.	After 4 weeks of service fracture of the os suffraginis at its upper end.

No.	Description.	Diagnosis.	Pre Treatment.	Day of Operation.	Remarks About Operation.	Course of Operation.
53	Gelding. 10 years old. Heavy draught horse.	Thickening of the flexor tendon of left fore leg.	Line fired	June 3, 1901.	Left median and ulnar nerve.	Still in service in the fall of 1904.
54	Gelding. 10 years old. Heavy draught horse.	Thickening of the flexor tendon of left fore leg. Beginning contraction of the fetlock joint when bought.	?	June 7, 1901.	Left median and ulnar nerve.	Horse was repeatedly examined. The thickening disappeared so that the flexor tendon of the coffin bone is only a trifle thicker than that of the sound leg, likewise the vertical position of the fetlock became almost normal. Still in service, Dec., 1904.
55	Mare. 12 years old. Heavy draught horse.	Chronic periarthritis of the right anterior fetlock Lane when bought.	?	June 17, 1901.	Right median nerve. Horse serviceable.	After 3 months sloughing of hoof, beginning with swelling on the coronary band and the limb to the middle of the metacarpus. In this case at the same time with the swelling great pain was noticed and also higher temperature at the scar of the operation of the median nerve.
56	Gelding. 7 years old. Light driver.	Chronic periarthritis of the right fore fetlock.	Treated for some time in the veterinary hospital.	June 17, 1901.	Right median and ulnar nerve. Lameness disappeared. Primary healing.	4 weeks after operation animal was discharged. Nothing abnormal noticed on extremity. After half hour's work, loosening of horny frog and heels with sloughing of hoof following in 2 days. Sold after 4 months.
57	Gelding. 7 years. Heavy draught horse.	Thickening of the flexor tendon of left fore leg.	.....	July 16, 1901.	Left median nerve with result.	
58	Gelding. 13 years old. Heavy draught horse.	Thickening of flexor tendon of left fore leg. Enlargement of os sufraginis, slight contraction, lame when bought.	.....	Oct. 8, 1901.	Left median and ulnar nerve with result.	Still in service in the fall of 1904.

No.	Description.	Diagnosis.	Pre Treatment.	Day of Operation.	Remarks About Operation.	Course of Operation.
59	14 years old. Draught horse.	Thickening of the flexor tendon, enlargement of right fore fetlock.	Blistered.	Oct. 10, 1901.	Right median nerve. Lameness somewhat diminished.	?
60	Gelding. Draught horse.	Thickening of the flexor tendon of left fore leg.	?	Oct. 31, 1901.	Left median nerve with result.	?
61	Gelding. 14 years old. Heavy draught horse.	Thickening of the flexor tendon of left fore leg, slight contraction and enlargement of the fetlock.	Blistered.	Nov. 14, 1901.	Left median and ulnar nerve with result.	Still in service in fall of 1904.
62	Gelding. 12 years old. Heavy draught horse.	Kingbone on left fetlock.	Blistered.	Dec. 2, 1901.	Left median and ulnar nerve with result.	Still in service in fall of 1904.
63	Gelding. 5 years. Heavy draught horse. 4 weeks after being bought suddenly lame.	Arthritis and traumatic peri-arthritis of the left fore fetlock joint. Sidebone forming. Very lame.	Given a rest of 2 months. Blistered after 8 days' trial service, again very lame.	Nov. 25, 1901.	Left median nerve. Lameness diminished. After 3 weeks ulnar nerve with complete result.	After ulnar neurectomy the horse improved very rapidly and is put to daily work hauling 13,000 to 15,000 pounds. In Dec., 1904, still in service.
64	Mare. 10 years old. Driver.	Periarthritis below right carpal joint. Lame for 9 months.	.....	Dec. 10, 1901.	Right median and ulnar nerve with result.	Still in service in fall of 1904.
65	Gelding. 6 years old. Heavy draught horse.	Thickening of the flexor tendon of left fore leg.	?	Jan. 18, 1902.	Left median nerve with result.	Reported still in service.
66	Stallion. 5 years old. Heavy draught horse.	Periarthritis of the left fore fetlock joint. Lame for 6 months.	Blistered.	March 2, 1902.	Left median and ulnar nerve.	After 6 months severe lameness appeared. Swelling at the place of operation on the median nerve, this point extremely sensitive on palpation. Loosening of coronet. Sloughing of hoof.

No.	Description.	Diagnosis.	Pre Treatment.	Day of Operation.	Remarks About Operation.	Course of Operation.
67	Gelding. 14 years old. Heavy draught horse.	Thickening of the flexor tendon of left fore leg. Enlargement of the os suffraginis.	Blistered.	March 28, 1902.	Left median and ulnar nerve with result.	Dec., 1904. still in service, great reduction of the tendon thickening.
68	Gelding. 12 years old. Heavy draught horse.	Contraction of left fore leg with a great lameness.	Treated in veterinary hospital by blistering and cauterizing.	April 13, 1902.	Left median and ulnar nerve with result.	Contraction not reduced by the operation. In the spring of 1904, still in service.
69	Mare. 14 years old. Light driver.	Osseous side-bone of right fore fetlock.	Blistered, fired, and recommended to be destroyed.	April 19, 1902.	Right median and ulnar nerve, experimentally with result.	Used as a driver. Dec., 1904, still in service.
70	Gelding. 11 years old. Expresser.	Thickening of the flexor tendon. Ringbone of right fore leg.	?	April 28, 1902.	Right median nerve alone purposely. Slight improvement. Owner would not consent to ulnar operation.	On account of continued lameness destroyed in four months.
71	Gelding. 5 years. Heavy draught horse.	Thickening of the flexor tendon of left fore leg.	?	May 13, 1902.	Left median and ulnar nerve with result.	In fall of 1904, still in service.
72	Gelding. 5 years old. Light driver.	Ringbone of right fore leg. Very lame.	Blister.	June 3, 1902.	Right median and ulnar nerve, no lameness.	Sloughing of hoof after 6 weeks.
73	Gelding. 4½ years old. Heavy draught horse.	Thickening of the flexor tendon of right fore leg. Very lame.	Blistered.	July 11, 1902.	Right median and ulnar nerve with result.	Lost sight of after three months.
74	Gelding. 6 years old. Heavy draught horse.	Thickening of the flexor tendon of left fore leg. Lame 6 months.	Blistered, etc.	Aug. 23, 1902.	Left median and ulnar nerve with result.	In summer of 1904, still in service.
75	Gelding. 14 years old. Heavy draught horse.	Thickening of flexor tendon and ringbone on both fore limbs. Lame for over one year.	No treatment.	Nov. 10, 1902.	Median and ulnar nerve on both fore limbs with result.	After 3 months of good service, sloughing of the left hoof, after a nail prick while shoeing.

No.	Description.	Diagnosis.	Pre Treatment.	Day of Operation.	Remarks About Operation.	Course of Operation.
76	Mare. 18 years old. Trotter.	Ringbone on left fore fetlock. Lameness for two months.	Blistered and fired.	Feb. 3, 1903.	Left median and ulnar nerve with result.	After six weeks of hard driving at livery work suddenly a splintering fracture of the left anterior os sufraginis. Horse was driven after fracture for 3 miles without apparent lameness. In fall of 1904, still in service.
77	Gelding. 6 years. Heavy draught horse.	Thickening of the flexor tendon of left fore leg.	Fired.	Febr. 14, 1903.	Left median and ulnar nerve with result.	Good service or three months, then fracture of os sufraginis on account of severe work.
78	Gelding. 14 years old.	Thickening of flexor tendon, side-bone on left fore fetlock. Very lame.	Blistered and cauterized.	March 13, 1903.	Left median and ulnar nerve with result.	After 6 months' good service, sloughing of the hoof from bad shoeing.
79	Gelding. 8 years old. Heavy draught horse.	Thickening of the flexor tendon of left fore foot. Flat hoof.	Blistered and cauterized.	March 14, 1903.	Left median and ulnar nerve with result.	In summer of 1904, still in service.
80	Gelding. 6 years. Heavy draught horse.	Thickening of the flexor tendon of left fore foot.	Blistered.	April 11, 1903.	Left median and ulnar nerve with result.	Oct., 1904, still in service.
81	Gelding. 6 years. Heavy draught horse.	Ringbone of left fore foot.	Blistered.	April 14, 1903.	Left median and ulnar nerve with result.	Horse previously useless, now serviceable, last seen Oct., 1904.
82	Stallion. 18 years old. Heavy draught horse.	Thickening of the flexor tendon of both fore legs. Ringbone on left fore leg. Horse can't get up alone.	Blistered.	April 16, 1903.	1. Left median and ulnar. 2. Right median nerve with result.	Still in service in fall of 1904.
83	Gelding. 12 years old. Light driver.	Ringbone of right fore fetlock. Very lame.	Blistered.	June 29, 1903.	Right median and ulnar nerve with result.	After 4 weeks' service, fracture of the os sufraginis.
84	Gelding. 16 years old. Light driver.	Chronic periarthritis of right fore fetlock, slightly lame for months.	Blistered.	July 17, 1903.	Right median and ulnar nerve with result.	

No.	Description.	Diagnosis.	Pre Treatment.	Day of Operation.	Remarks About Operation.	Course of Operation.
85	Gelding. 8 years old. Light draught horse.	Exostosis of left fore fetlock joint. After trauma very lame for one year, not serviceable.	Cauterized and blistered.	July 29, 1903.	Left median and ulnar nerve with result. 3 weeks later placed in service and continued therein.	Oct., 1904, died from colic.
86	Gelding. 14 years old. Heavy draught horse.	Ringbone of left fore leg. Lame for one year.	.....	Aug. 23, 1903.	Left median and ulnar nerve with result. After the operation considerable swelling of the fetlock, which remained constant.	After 3 months' good service, sloughing of the hoof caused by bad shoeing.
87	Stallion. 11 years old. Heavy draught horse.	Thickening of the flexor tendon of right leg. Thickening of flexor tendon and sheath of left leg. Slight contraction. Lame 6 months. Not in service, being lame.	Blistered and cauterized. Cauterized and blistered.	April, 1903. Nov., 1903.	Right median nerve. Slight lameness, which disappeared after a few weeks. Left median and ulnar nerve with result.	Good service (interfering boots necessary). Dec., 1904, still in service.
88	Gelding. 12 years old. Heavy draught horse.	Thickening of the flexor tendon of right fore leg. Slight contraction of fore limb.	Cauterized and blistered.	Aug. 27, 1903.	Right median and ulnar nerve with result.	Dec., 1904, still in service. Contraction of limb disappeared.
89	Stallion. 14 years old. Driver.	Ringbone above left front coronet. Treated 6 months. Severe lameness.	Cauterized and blistered.	Dec. 14, 1903.	Left median and ulnar nerve with result.	Very good trotter. 3 months after the operation while training dropped dead. Post mortem showed rupture of heart.
90	Gelding. 16 years old. Heavy draught horse.	Thickening of the flexor tendon and sheath of left fore foot.	Cauterized and blistered.	Dec. 15, 1903.	Left median and ulnar nerve with result.	Still in service in fall of 1904.
91	Mare. 14 years Heavy draught horse.	Sidebone of left fore fetlock joint. Knuckling of joint.	Cauterized and blistered.	Jan. 12, 1904.	Left median and ulnar nerve with result.	Dec., 1904, still in service.

No.	Description.	Diagnosis.	Pre Treatment.	Day of Operation.	Remarks About Operation.	Course of Operation.
92	Gelding, 6 years. Heavy draught horse.	Sidebone of left fetlock joint of fore foot.	Cauterized and blistered.	Jan. 29, 1904.	Left median and ulnar nerve with result.	After 2 months sloughing of the hoof caused by shoe being caught in street railway track. Still in service.
93	Gelding, 8 years old. Heavy draught horse.	Exostosis below the carpal joint. Thickening of the flexor tendon and sheath of left fore foot.	Cauterized and blistered.	April 16, 1903.	Left median and ulnar nerve with result.	
94	Gelding, 8 years old. Heavy draught horse.	Thickening of flexor tendon and sheath of left fore foot. Enlargement of os sufraginis.	Cauterized and blistered.	May 23, 1904.	Left median and ulnar nerve with result.	Still in service.
95	Mare 6 years old. Heavy draught horse.	Thickening of flexor tendon and sheath of left fore foot. Very great enlargement of os sufraginis. Very lame since spring of 1904.	Cauterized and blistered.	Nov. 17, 1904.	Left median and ulnar nerve with result.	Since Dec. 3 1904, completely serviceable.
96	Stallion, 10 years old. Russian trotter.	Ringbone of right fore leg. Very lame.	Repeatedly blistered and cauterized.	Dec. 1, 1904.	Right median and ulnar nerve with result.	Good results.

I. OPERATION ON THE RIGHT ANTERIOR EXTREMITY.

- 4 times on account of chronic periarthrititis at the carpal joint.
 3 " " " " " periostitis below the carpal joint.
 3 " " " " " periarthrititis at the fetlock joint.
 I " " " " " painful tendon callus following tenotomy.
 I " " " " " hyperostosis of the os suffraginis.
 I " " " " " thickening and contraction of the superior sesamoid ligament.
 I time on account of chronic arthritis of the fetlock joint, enlargement of the os suffraginis.
 I time on account of sidebone at the fetlock joint.
 I " " " " " thickening of the flexor tendon and its sheath and ringbone.

II. OPERATION ON THE LEFT ANTERIOR EXTREMITY.

- I 3 times on account of thickening of the flexor tendon and its sheath.
 9 times on account of ringbone at the fetlock.
 8 " " " " " thickening of the flexor tendon and its sheath, thickening of the fetlock, moderately contracted position.
 4 times on account of chronic periarthrititis at the fetlock joint (sidebone of moderate size demonstrable).
 4 times on account of sidebone (fetlock).
 2 " " " " " chronic periostitis on the metacarpus.
 2 " " " " " " periarthrititis at the carpal joint.
 2 " " " " " " lameness of the coffin joint (?)
 2 " " " " " enlargement of the os suffraginis.
 I " " " " " hyperostosis at the fetlock.
 I " " " " " exostosis.
 I " " " " " chronic lameness of the coffin joint.
 I " " " " " ringbone and ossification of the coffin cartilages.
 I time on account of development of shortened tendon with vertical position of the foot.
 I time on account of painful tendon callus following tenotomy.

- I time on account of ankylosis of the fetlock joint, secondary contraction of the tendons.
- I time on account of traumatic arthritis of the fetlock joint.
- I " " " " thickening of the flexor tendon and its sheath and sidebone (of the fetlock).
- I time on account of thickening of the flexor tendon and its sheath and exostosis below the carpal joint.
- I time on account of ringbone at the coronet.

III. OPERATIONS ON BOTH ANTERIOR EXTREMITIES.

Once on account of thickening of the flexor tendon with its sheath.

Once on account of thickening of the flexor tendon and its sheath and ringbone.

Once on account of thickening of the flexor tendon and its sheath on both sides and ringbone on the left side.

Altogether 41 horses were operated on for chronic lameness dependent on thickening of the flexor tendon and its sheath without vertical position of the fetlock, or with a slight or moderate degree of contracted position already present. Cases with a high degree of tendon shortening and vertical foot and demonstrable secondary changes in the bones, joints and ligaments of the phalanges were thrown out as unsuitable for the operation. Hence the cases with complications, *e. g.*, sidebone, etc., are not included. Of these 41 cases, 39 were in heavy draught horses and but 2 in light drivers, of which one (case 35) was put to heavy work, by which was brought about, as also in the 39 draught horses, pathological change in the so-called sixth head (strengthening ligament) of the flexor tendon of the coffin bone, a prognostic sign of doubtful value. In most cases the effect of the operation was satisfactory; the horses, often unserviceable for a long time, again became useful. Since results indicated that neurectomy of the median nerve alone was not always sufficient, neurotomy of the ulnar nerve also was later performed. After the operation the weight could be borne better on the fetlock, the vertical position usually became much lessened, or disappeared altogether, and in

the majority of cases a real decrease of the tendon thickening could be shown. In many cases no remarkable changes were perceived in the tendons, save perhaps an improvement of position with good service. Even an increase indeed (case 87) of the tendon thickening, with good functioning and improvement of a contracted position, could be demonstrated. In a few cases, after months a new increase of the tendon thickening and of the contracted position occurred. The appearance of thickening of the flexor tendon and its sheath as a sequel of neurectomy was never observed.

I should not fail to mention that, as in tenotomy, there is not immediately a complete return of the foot to the normal position, but that we at once removed the high calks and corrected the hoof to the inner side of both quarters. Only a slight elevation of the wall was allowed, which depended on the relation of the fetlock, now returning to a normal position.

I should like to mention five cases of tendon shortening with vertical position of the foot, in which we performed tenotomy of the flexor tendon of the coffin bone. Although we took all necessary precautions, gradually corrected the hoof and the shoeing, and did not put the horses in service until after a reasonable time, the results were not satisfactory. Other veterinarians have had similar experiences. In all five cases the contracted position gradually recurred with lameness, the formation of a painful, rather large tendon callus, increase in size of the extremity (severe œdema and sclerosis of the skin and subcutaneous tissue) as high as the carpus, so that we no longer performed the tenotomy, but recommended neurectomy to the owners, especially as this latter operation has been so satisfactory in tendon shortening with vertical position of the foot. In two of these cases of tenotomy (13 and 31), neurectomy was also performed. In case 13, an excellent draught horse, the animal again gave complete satisfaction in service. Unfortunately, after three months of service sloughing of the hoof occurred, in consequence of being pricked with a nail while being shod. Case 31 was likewise serviceable, but the

contracted position recurred after nine months of service.

In the 96 cases where the anterior extremities were operated on severe lesions developed, which made it necessary to destroy the animal in 26 cases (27 per cent. of the cases operated on) during the period of observation from December, 1898, to December, 1904. Of these 26 cases, 17 were sloughing of the hoof (17.7 per cent. of the cases operated on), 7 cases were fractures (7.2 per cent. of the cases operated on), 2 were ruptures of tendons (2 per cent. of the cases operated on).

Sloughing of the hoof was observed:

(a) without other known cause 7 times:

1. Case 9, driver, ringbone, 21 days after the operation after 6 days of service. (During this operation one of the mediano-radial veins was opened but tamponed. Tampon removed after 36 hours. Normal healing followed.)
2. Case 56, light wagon horse, chronic peri-arthritis at the fetlock joint, 4 weeks after the operation after a half-hour's drive.
3. Case 72, light wagon horse, ringbone, 6 weeks after the operation.
4. Case 30, driver, lameness of coffin joint, 2 months after the operation.
5. Case 55, heavy draught horse, chronic peri-arthritis at the fetlock joint, 3 months after the operation.
6. Case 66, heavy draught horse, chronic peri-arthritis at the fetlock joint, 6 months after the operation.
7. Case 47, driver, peri-arthritis at the carpal joint, 12 months after the operation.

(b) following a *nail puncture* while being shod in three cases:

1. Case 13, heavy draught horse, painful tendon callus following tenotomy, after 3 months.
2. Case 75, heavy draught horse, thickening of the flexor tendon and its sheath, ringbone, after 3 months.
3. Case 19, heavy draught horse, moderate shortening of tendons with vertical foot, after 2 years.

(c) following *contusion through the horse-shoe* twice :

1. Case 86, heavy draught horse, ringbone, after the operation chronic œdema and sclerosis of the skin of the extremity operated on, after 3 months.
2. Case 26, light draught horse, hyperostosis of the fetlock, after 2 years.

(d) once following *hard gall* :

Case 79, heavy draught horse, thickening of the flexor tendon and its sheath, flat hoof, after 6 months.

(e) once following *fissure of the horn* :

Case 4, Russian trotter, ringbone, after 1 year.

(f) once after *stepping on a nail* :

Case 7, light draught horse, ringbone, after 2 months.

(g) once after getting *caught in the street railway track* :

Case 92, heavy draught horse, sidebone at the fetlock joint, after 2 months.

(h) after *very hard service*, once :

Case 34, driver, chronic peri-arthritis below the carpal joint, after 1 year.

Fracture of the os suffraginis :

1. Case 20, driver, sidebone at the fetlock joint, during a hard drive, 16 days after the operation, 6 days after beginning service (excluding a pre-existing fissure).
2. Case 28, heavy draught horse, hyperostosis of the os suffraginis for 2 months, after 14 days' service (not examined anatomically, pre-existing fissure?)
3. Case 52, Russian driver, chronic arthritis of the fetlock joint, hyperostosis of the fetlock, suddenly lame 3 months ago, fissure (?), after 4 weeks of service (not examined anatomically).
4. Case 84, driver, chronic peri-arthritis at the fetlock joint for many months, after 4 weeks of service (not examined anatomically).
5. Case 76, Russian driver, ringbone, after 6 weeks of hard service.
6. Case 78, heavy draught horse, thickening of the flexor ten-

don and its sheath, sidebone, after 3 months.

Fracture of the metacarpus :

Case 24, light draught horse, chronic periarthrititis at the carpal joint, after 9 months.

Rupture of the flexor tendon of the coffin bone at the height of the sesamoid bones :

1. Case 22, driver, ringbone, after 3 months of service in consequence of a leap over a ditch.
2. Case 46, trotter, ankylosis in the fetlock joint, thickening of the flexor tendon and its sheath, after 6 months (ossification of the tendon and tendon sheath).

(Concluded in May REVIEW)

STILLWATER, MINN., began the killing of all unmuzzled dogs on March 4. There has been so much rabies throughout the state that various sections have undertaken the extermination of every canine who has no responsible owner to obey the muzzling order. Large numbers of cattle and other animals have been bitten, and many persons have been forced to undergo the Pasteur treatment.

STALLION REGISTRATION IN MINNESOTA.—Minnesota is making an earnest effort toward securing a stallion registration law from the present Legislature, and with prospects of success. Some of the essential features of this law are : Verification and registration of pedigrees in the case of registered horses ; veterinary examination of all stallions over four years ; horses to be released from further examination after ten years of age. This work to be in charge of a board consisting of the President of the State Horse Breeders' Association, Professor of Animal Husbandry in the College of Agriculture, and the Professor of Veterinary Medicine in the Agricultural College of the State University. Actual examination to be done by committees of two, each committee consisting of a practical horseman and a veterinarian. The horses are to be assembled at specified places in each county for examination. Examination and registration fee \$3. License to be renewed each year without examination, except as mentioned ; renewal fee \$2. Stallions are divided into two general classes, pure bred and grade. It is made a misdemeanor to use pedigrees or illustrations on posters or otherwise so as to mislead.

INFECTIOUS VAGINAL CATARRH IN CATTLE,*

(*VAGINITIS GRANULARIS INFECTIOSA BOVIS.*)

ITS TREATMENT AND HOW TO CONTEND AGAINST IT.

BY DR. H. RAEBIGER,

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Infectious vaginal catarrh in cattle having spread to such an extent and having reached extreme proportions in all countries, I may be allowed in the following to describe the experiments made in Germany to investigate and combat this plague.

For the fundamental achievements obtained in the discovery of its etiology, the course of the disease and its economic importance, we are indebted to Prof. Dr. Ostertag, Director of the Hygienic Institute of the Berlin Veterinary High School.

According to Ostertag's results, which extend back as far as the year 1898, and have been confirmed by numerous investigators, infectious vaginal catarrh is caused by a streptococcus the existence of which in the purulent vaginal efflux as well as in the sectional preparations will be confirmed by the diseased parts of the vagina. The streptococci predominate extracellular, but will also occasionally be found imbedded in the cells of the matter. The streptococci in infectious vaginal catarrh are found only in the pathological secretion of the vagina and, should the catarrh encroach on the womb, also in the efflux of the womb, but never in the blood.

The exciter of contagious vaginal catarrh belongs to the type of short streptococci, forming chains of from six to nine links, which are held together by a delicate, uncolorable covering. The streptococcus of contagious vaginal catarrh is immovable, but possesses a considerable power of growth, in virtue whereof it is capable of forcing its way also into the epithelium and papillary bodies of the mucous membrane of the vagina. In the sectional preparation they are to be found between the

* Specially written for the AMERICAN VETERINARY REVIEW.

epithelia as well as in the papillary cells. The fact that the streptococci are able to force their way into the tissue of the mucous membrane, explains the difficulty against which the first attempts at treatment, which were made here some six years ago, have had to contend.

The streptococci of vaginal catarrh can easily be colored with basic aniline dyes, particularly beautiful pictures being obtained by coloring the pus and the sectional preparations with Löffler's methyl-blue; according to Gram the streptococci are discolored.

The exciter of vaginal catarrh can be reared at brooding warmth and room temperature on ordinary isinglass, clotted blood serum, in gelatine or in bouillon. The cocci thrive exceedingly well on glycerine-agar and on urine-agar. On sour culture medium the growth remains weak. In bouillon and in the condense-water of oblique chilled culture medium the microorganism forms short chains of from six to nine links. Blood serum and glycerine are not liquefied, milk is not turned sour, and, what is more, neither SH_2 nor indol are produced, nor is gas formed in a solution of grape sugar.

During several years' work against this pest I have found Ostertag's statements confirmed in all respects and submit the following facts as indisputable proofs that the streptococci discovered by Ostertag are the specific exciters of the disease, viz.:

1. They are always to be found in the diseased secretion.
2. Their artificial cultivations at once produce the typical catarrh.
3. The streptococci are always to be found in artificially infected cows.

The transference of the infectious matter is only successful in the case of cattle, horses, pigs, goats, sheep, dogs and the usual small laboratory animals, such as rats, mice, rabbits and guinea-pigs; pigeons resisted all attempts at infection. Introduction of the artificial cultivations of the accompanying bacteria, *Staphylococcus pyogenes aureus* and *Bacterium colli com-*

munis, which are generally found in the efflux of cattle affected with infectious vaginal catarrh, failed to produce vaginal catarrh in cattle, a fact I would point out in passing.

The natural infection of female cattle may be caused by direct communication with the vaginal efflux of diseased animals through bodily contact; by infected beds and barn-implements, by the infected hands of the farm-attendants, *e. g.*, when milking; by the bull when covering and in the handling of the calves, which are infected not only at birth, but later on by the mother or by diseased stable companions.

The disease is more severe among heifers and young cows than in older animals—among a totally infected herd very old cows are sometimes found to be quite healthy—generally, however, taking the same course so far as changes in the mucous membrane are concerned, the after-effects vary considerably, as we shall see later on. The stage of incubation lasts from two to six days.

If we picture to ourselves the histological structure and appearance of the healthy mucous membrane of the vagina we shall see that it is a firm membrane of elastic connective tissue, fibrous and free from glands, with a feebly developed papillary structure and covered with layers of cellular epithelium; it is of a uniformly white or pink color, yellowish white in old cows, glossy with moisture, smooth, and showing no surface lymphatic nodules or slimy coating apart from quickly passing physiological conditions.

At the commencement of the inflammation, however, a slight swelling of the exterior of the pudenda is noticeable and on inspection an extreme sensitiveness and a swelling of the vaginal mucous membrane. In consequence of the inflammatory irritation of the morbid agent the mucous membrane, especially within the entrance of the vagina, shows an increased supply of blood, a deeper red and is covered with a whitish grey, fibre-shaped coating of slimy pus. One or two days later many compact nodules, from the size of a pinshead to that of a double millet grain, projecting above the level of the mucous

membrane and easily visible at some distance under a slanting ray of light, appear on the mucous membrane, in the red inflammation of which quite a typical, more or less yellowish tint is to be seen at all stages of the catarrh. These nodules, which represent the inflamed lymph-follicles and which, under normal conditions, lie within the mucous membrane, are of a dark red, stand in high relief of the inflamed vicinity, and appear in greatest numbers within the vaginal entrance and on the puffed-out swellings which usually make their appearance near the clitoris. At a later stage of the catarrh the mucous membrane often begins to fall into pleats, on and between which the nodules may often be traced right up to the entrance to the womb. These nodules are often found to be lying in groups, piled one upon another to such an extent that it appears like a raspberry.

The surface of the nodules is neither of a warty nor of an uneven nature, but smooth and of a firm consistency. When the chronic stage of the catarrh sets in these nodules become smaller, change in color to a bright red or yellow, appear transparent and look very much like blisters. A prick with a needle, however, readily proves their solidity.

These nodules are never lacking. That they are characteristic for infectious vaginal catarrh is shown by the fact that even by artificial infection the swelling of the lymph-follicles is always plainly visible and typical in form, whereas in the case of other vaginal inflammations this is never noticeable. On the other hand, small blisters and sores do not appear.

With the swelling of the lymph-follicles the secretion of the vaginal mucous membrane increases and if the exciter of the catarrh is propagated on the mucous membrane of the womb, which is not always the case, a glassy, albumen-like, sometimes creamy efflux results, mixed with more or less whitish matterly flakes of milk-curd appearance. Contrary to other effluxes (*Fluor albus*) this is odorless in every stage of the disease. This efflux dries in the hair of the hind legs, forming a dirty grey crust and shows an alkaline or neutral reaction.

The efflux is rarely considerable, generally only very slight, but may be more plainly observed when the animal is led round or lying down and is increased on the commencement of the treatment. In most cases the efflux is so slight that it passes almost entirely unnoticed.

On account of the irritation caused by the inflammation, the animals render themselves suspicious in the first days of the disease, becoming restless and passing urine oftener than usual, occasionally remaining for some time in position with legs spread, squeezing the urethra.

After about four weeks, the swelling of the pudenda and of the vaginal mucous membrane recedes. The latter loses its inflamed redness and acquires a yellowish or faded red color; the nodules, however, fade only very slowly and gradually acquire, as already mentioned, the appearance of small blisters, which may be compared with herring spawn. Little by little the vaginal mucous membrane loses its slimy coating, but the efflux continues a long time, so far as a catarrh of the womb is concerned.

As regards the duration of the disease, attention must be drawn to the fact that it may last not only three to four months, as is often supposed, but that the plague can prevail among herds of cattle six months and even longer. I have even known cases where it lasted several years.

From the appearances just described, infectious vaginal catarrh can easily be recognized during any stage of the disease by an inspection of the sexual organs of the cow, by the yellowish red, more or less inflamed swelling of the mucous membrane, the prominent and hard nodules over its surface, the swollen lymph-follicles and the odorless albumen-like vaginal efflux, mixed with whitish matterly flakes, or by the coating of the mucous membrane.

The examination of female animals can be readily carried out in the following manner, viz.:—One man holding the animal for examination by the nostrils, another drawing its tail aside; or in the case of particularly restless cows or heifers,

three experienced assistants should be stationed at the head and haunches, one of them holding the tail aside, while the examiner taking hold, with forefinger and thumb of each hand, one-half of the lower lip of the sexual organ from the outside, and drawing them apart, submits the mucous membrane of the vagina for his inspection. In this way fifty to seventy-five animals can be inspected per hour, according to the position of the farms and the extent of the herds.

Only in the case of very gloomy cow-houses, will it be necessary to lead the animals into the yard, or to make use of an electrically illuminated vaginal speculum, such as has been constructed a short time ago by Plate.

Bulls, after having covered diseased cows or heifers, seldom show visible signs of the disease, although it has been proved that they are contaminated and have communicated the disease to healthy animals. Of the bulls examined, only about twenty to thirty per cent. showed a slight swelling of the fore part of the utricule up to the utricule aperture which is surrounded with long hairs. In these cases, by pressing the utricule gently with the hand and drawing the latter along to the fore end, drops of a greyish-white, almost odorless secretion could easily be extracted. In one case there appeared at the same time a slight inflammatory reddening of the penis, but only in very few cases, in which the penis was more severely inflamed and the scrotum swollen, the secretion flowed of its own accord, in drops large enough to be easily perceptible.

Several examinations of such secretion were made, all of which proved the existence of the streptococci of vaginal catarrh, which, under certain conditions, are capable of producing preputial catarrh in bulls.

The utricule of the bull may readily be examined in the cow-house, restless and vicious animals while they are being fed by the attendant.

The examination of the penis, however, may be most quickly effected by separating the bull and placing him behind a cow, causing him to unsheath.

Apart from a passing restlessness of the cows, the general health of infected animals is not affected. Even by extreme inflammation of the mucous membrane, neither male nor female animals suffered from increase of bodily heat and no loss of appetite was noticeable. *The disease is in so far of great economic importance, as cattle owners may thereby be subjected to the heaviest losses.* On account of its abnormal contagious propensity it spreads rapidly everywhere. This is proved by the fact that in most infected areas, where all the cattle on large numbers of farms were examined, generally from 90-98 per cent. were found to be diseased. Only in a few districts the proportion was from 50-60 per cent.

The attendant diseases which ensue, as well as the disadvantages to agriculturists, principally affect the female animals. They appear in the form of lack of ardour, incapability of conception (10-75, sometimes 100 per cent. respectively), too late conception and sterility. Other effects are miscarriage at all stages of pregnancy (10-70 per cent.), a late development of the secundine, death of the foetus, uteral catarrh (Endometritis catarrhalis et urulenta), diseased ovary, and finally a decreased production of milk. In isolated cases even a decrease in the quality of the milk was discovered.

To the above may be added that the calves of animals which are or have been affected are not so strongly developed, and are more easily susceptible to disease than the progeny of healthy cows. Infection and sickening of breeding cattle results in a rapid and considerable spreading of the disease through covering. Furthermore, infected breeding cattle do not produce nearly so many calves as healthy bulls. Sometimes lack of copulative desire occurs, and, more seldom, loss of physical power.

The damage due to this plague is often considerably greater than that caused by foot-and-mouth disease.

So far as differential symptoms are concerned, only a breaking out of the little blisters comes into consideration. Contrary to infectious vaginal catarrh, it is an acutely passing and mild

disease, in which no nodules, but blisters varying in size from a millet seed to a pea, appear on the mucous membrane. They are filled with pus, soon burst and pass off as sores which quickly heal up and seldom leave a white scar behind. When the blisters burst, a comparatively strong, slimy efflux is given out, followed by an efflux rich in matter. Besides this, the bulls contract the disease to a remarkable degree in utricule and penis, on the mucous membrane of which little blisters and sores appear, a slimy matterly efflux dropping from the utricule at the same time.

Furthermore differs the blister eruption from infectious vaginal catarrh in so much as the general health of cattle suffering from the former is affected. The diseased animals recover in eight to fourteen days, at latest after three or four weeks, without any treatment. Finally, may be added, that contrary as in the case of vaginal catarrh, blister eruption occurs also in horses, goats, sheep and pigs. The exciter of blister eruption is unknown.

I began researches in the treatment of infectious vaginal catarrh in the winter of 1900 and continued them almost without a break until the year 1906. Throughout these experiments the leading idea was to discover a method by means of which not only a cure could be effected, but one which could be conscientiously applied by non-practitioners at any time. For in these cases the expert would only be able to introduce and control the treatment, his time, as a rule, not allowing him to continue personal treatment.

The inquiries which I made towards finding a suitable therapeutic, first took the form of laboratory work and was extended to the examination of the antiseptics known to the practice, as to their effect on the streptococci of infectious vaginal catarrh.

For testing and re-testing of numerous preparations only newly-bred, virulent artificial cultivations were used. The result of the examination is drawn up in the following table:

Name of Preparation.	Solution in Water.	Kills the Streptococci in Minutes.	Price per Kilogram in Large Quantities.
Kreolin	2 ½ per cent.	1	Mark 1.80
Lysol	2 ½ "	1	" 2.25
Bacillol... . .	1 ½ "	1	" 0.70
Lysoform . . .	2 ½ "	1	" 2.75
Septoform . . .	2 ½ "	1	" 2.50
Lactic Acid . .	2 "	1	" 6.—
Chemically pure Liquid Car-			
bolic Acid. . .	2 ½ "	10	" 1.80
Nitrate of Silver.	½ "	1	" 82.—
Ichthyol-Silver.	10/100 "	2	" 200.—
Chemically pure Tannin	1 "	{ Ineffective after 20 } { hours' influence. }	" 4.80

When the criticism of these medicines is made to depend on the facts that :

1. They are readily soluble in water.
 2. They are good destroyers of streptococci.
 3. They display a penetrating efficacy.
 4. They are relatively non-poisonous.
 5. They have no inflammatory effect on the mucous membrane, and finally
 6. They are cheap,
- tannin must immediately be discarded as ineffective.

In the same way, according to Ostertag's experiments, the combined remedies of mineral origin (zinc-sulphate, copper-sulphate, sulphate of iron) used in the usual 2 ½ per cent. concentration, not having succeeded in destroying the exciter of vaginal catarrh after one hour's influence.

Astringent remedies are therefore not to be recommended for the treatment of this disease ; at best they only mature an apparent result. Ichthyol silver fulfils all the conditions splendidly, except that the price is much too high for veterinary practice, and, above all, for use in large quantities, so that up to now this antiseptic has been used only in a few instances.

The price of lunar caustic (argentum nitricum) and of lactic acid must also be taken into account. The killing effect of solutions of carbolic acid takes place far too slowly. Therefore only the creosote products are left. Of these Bacillol is prominent as being most efficacious and cheapest.

According to the results obtained during many years of experience, Bacillol undoubtedly fulfils most nearly to perfection all the requirements necessary for a preparation to be used in vaginitis therapeutics. It is soluble in water under any conditions and forms constant solutions. Bacillol in 1½ per cent. solution kills the streptococci of infectious vaginal catarrh with certainty in one minute. From the numerous cures effected in practice I have become sufficiently convinced of the penetrating effect of Bacillol on the living tissue of the mucous membrane. From a toxicological point of view, according to the examinations made by the Bacteriological Institute in Budapest, the preparation proved relatively less toxic than all the creosote products which have hitherto been known, as rabbits expired only after 2.2 to 2.4 gr. to each kilogram of their body-weight, whereas even smaller doses of carbolic acid and of Lysol sufficed to kill.

Even 2 per cent. solutions of Bacillol produce no irritation of the mucous membrane, and, like Lysol, concentrated Bacillol cauterizes only slightly if placed on the skin.

Apart from this, however, Bacillol has the great economical advantage of being cheapest of all similar medical substances.

The foregoing results having been obtained, the first practical experiments in the treatment of infectious vaginal catarrh were made, by rinsing the diseased sexual organs with an antiseptic. The rinsings, however, even when carried out with warm solutions, proved to be insufficient, and in consideration of the fact that the infectious matter forces its way from without into the vagina, within the entrance to which it produces the worst form of the disease, they were assisted by being followed by a padding of the vagina. A proper sized pad of cotton-wool or muslin ribbon, soaked with disinfecting solution, was pushed into the vagina immediately after irrigation. This method was effective, but had one great disadvantage: it had to be repeated daily, and as it had a certain irritative effect, was not suitable for cows in a state of pregnancy.

In consideration thereof, I tried, together with my former

colleague, Mr. P. Reimers, to substitute a powder treatment for the pad, such as has since been more fully described by Messrs. Streit Bros. We made use of alum-salicylic acid powder and Messrs. Streit Bros. of zinc-sulphate-boric acid powder in the proportions of 4: 1. The treatment consisted in blowing the powder, which had been kept perfectly dry, on to the diseased vaginal mucous membrane by means of a rubber ball fitted with a tube about 15 centimetres long, the dose being 1 teaspoonful per animal, for young cattle, and slightly diseased animals less.

The powder only required to be applied at intervals of six to ten days, but this method was met by the same difficulty as in padding—it could not be used on pregnant cows, as it endangered the abortus.

In order to be able to treat pregnant cows at the same time as the rest of the herd, we tried for the first time the experiment of applying an ointment to the vaginal mucous membrane, after having removed the slimy coating and secretion from the vagina by rinsing with a warm antiseptic solution.

During the last year the fitness and efficacy of the ointment treatment has repeatedly been confirmed by Ritzer and others. The advantages of this method are that the ointments have a loosening and penetrating effect on the tissues of the mucous membrane, and that, as the ointments are not irritative, they may be applied to both pregnant and non-pregnant animals.

At first the ointments were introduced into the vagina with the fingers, later by means of differently constructed instruments (wooden spatulas, ball conductors, syringes) and in different forms, such as gelatine capsules, pessaries and small pencil-shaped bougies.

According to my experience of all the various methods, extending over an experimental material of more than 35,000 head of cattle, treated under the most varied circumstances, it is shown that of all methods: the capsule method, the use of pencils of ointment and the application of ointment by means of a syringe are the best.

To facilitate the carrying out of the last-named method I

have constructed an ointment syringe which consists of a supply cylinder with introduction tube and of an adjustment or compression ball with an introduction pump, fitted with piston and handle.

The supply cylinder holds 100 grams of ointment and the introduction tube 10 grams. This arrangement allows of 10 large or 20 small animals being treated with each filling of the cylinder, a 10-gram dose sufficing for adult female cattle and about 5 grams for younger ones. The syringe may be filled with ointment of any consistency, ensures a reliable dosing and facilitates rapid treatment of cattle of all ages. The instrument maker, Hauptner, Luisenstr. 53, Berlin, has been entrusted with the manufacture of these ointment syringes.

Communication of the infectious material by the syringe may be easily prevented by dividing the herd into healthy and unhealthy groups before treatment. The syringe may also be boiled off and disinfected. In my researches, carried out on behalf of the Department for Agriculture of the province of Saxony, I have, for reasons already mentioned, mainly used Bacillol ointment, which is well founded and prepared by the Bacillol Works in Hamburg. For female animals 10 per cent. ointment was used, and for males, owing to their greater susceptibility, 6 per cent. ointment.

Two or three injections of the ointment should be administered to the patients weekly, according to the stage of the disease.

As a matter of principle, the smaller percentage of clinically healthy animals were always treated along with the others.

A simple method of introducing the ointment without any instrument is the capsule procedure.

For the so-called capsule method we are indebted to Mr. Ritzer, Circuit Veterinary Surgeon of Lichtenfels, at whose suggestion the Bacillol Works in Hamburg have prepared 6-10 per cent. Bacillol ointment in gelatine capsules so as to enable the ointment to be introduced into the vagina quicker, more easily and without waste. The capsules dissolve in the

vagina in about half a minute, setting the ointment free to act on the vaginal mucous membrane. The capsules are introduced as far as possible with the finger. Ritzer prescribes for each animal one capsule daily during the first five days, from the sixth to the fifteenth day one every other day, and from the sixteenth to the thirtieth day one every third day. In severe cases the treatment must be continued, one capsule every third day, until a cure has been effected. The capsules vary in size in accordance with the age of the animals.

In order to render the capsule treatment less expensive, Bacillol ointment is prepared in solid and in pencil form. These ointment pencils are 15 centimetres long and bear a centimetre scale on the inner side of the cover, so that they may be cut into longer or shorter pieces as required. The end thus cut off is inserted as far as possible, with the help of a stick, in order to obtain an intense effect near the mouth of the womb and to prevent the ointment from being forced out. As a rule, fifteen ointment pencils per animal are sufficient for a 30 days' treatment.

As Ritzer's pencil method does away with the capsules it is cheaper, whereas the capsule method, on the other hand, simplifies the treatment considerably.

Conception in heated animals may be efficaciously assisted by rinsing the vagina with a 2 per cent. solution of bicarbonate of soda before the covering takes place.

All bulls which have covered animals suffering from infectious vaginal catarrh, or which come from a district supposed to be infected, whether they show symptoms of the disease or not, must be placed under treatment before being allowed to mount healthy cows.

The bushy hair having been removed from the utricl with a pair of scissors, either capsules or pencils of ointment are inserted with the help of the forefinger, or the ointment is injected. Finally the utricl of the bull may be rinsed once or twice daily with a warm 1 per cent solution of Bacillol.

There are, as will be observed, many different methods of

treatment at our disposal, all approved in practice, which may be employed according to circumstances.

Before treatment of a herd is commenced it is advisable to carefully inspect the individual animals and to divide them into healthy and unhealthy groups, immediately excluding those few (according to my experience from 1 to 2 per cent.) suffering from a diseased womb, which may be designated incurable. Animals suffering from catarrh of the womb, form a constant source of infection for the remainder of the herd.

As it would seldom be possible to accommodate the animals in separate stalls, they must at least be separated so far as to prevent bodily contact between the two groups, or contamination with the dung drainage. The healthy animals, for instance, should be so placed that the drainage discharged into the gutter by the unhealthy should not flow towards them.

Prior to any treatment, the cow-houses must be thoroughly cleaned with water, especially the discharge-gutters; afterwards the floors and walls, so far as the animals come in contact with them, whitewashed, to about the height of a man, with milk of lime to which it would be better to add a little Bacillol, or be washed with a 2 per cent. solution of Bacillol. The cleansing and disinfecting of stalls and gutters must be repeated at weekly intervals until after the close of the treatment.

Milk of lime, which can only be used quite fresh, as it extracts CO_2 from the air, producing calcium carbonate, etc., is prepared by dissolving lime in water. The proper consistency for whitewashing is obtained by mixing one part of lime with two of water, and thin milk of lime for washing the floors and discharge-gutters, by mixing one part of lime with twenty parts of water. The lime-wash may be improved by an addition of 5 per cent. rocksalt to the boiling lime. In this way the lime-wash takes a firmer hold of the walls and does not easily rub off, as is generally the case.

I have found painting machines a useful aid when disinfecting the cow-house, and very well adapted for washing the animals with disinfectants.

In the case of both healthy and diseased cattle, when accommodated in the same cow-house, during the whole period of their treatment, strict cleanliness of the sexual organs and their surroundings, as well as of the tails down to the tuft, and of all parts coming in contact with the tail, must be maintained. The antiseptic washings are best carried out with a 1½ to 2 per cent. disinfectant fluid (Bacillol).

During the treatment, male and female animals are to be kept from copulation. After treatment, the bulls are only to be kept away from those heifers and cows which are known or supposed to be diseased. The bull-keeper, who must be acquainted with the symptoms of the disease, must be instructed to carefully examine each female animal for vaginal catarrh before it is covered. Under no circumstances must he allow a diseased animal to be covered before it has been completely cured. But also after the covering of healthy cows from an infected area—as a precaution—a disinfection of the utericle by introduction of Bacillol ointment and antiseptic washing of the surrounding parts must follow the leap at once.

The symptoms by means of which we may notice that healing has set in are as follows:—The female animals are to be considered as healed when the efflux and the slimy vaginal coating disappear, the inflamed condition of the mucous membrane dies away and the nodules (swollen lymph-follicles) become smaller and paler or, as is usually the case after the healing of fresh cases, disappear altogether. The healing, however, as Thoms has also shown, is not necessarily combined with the total disappearance of the nodules.

That the infectious matter is nevertheless killed off may, apart from the bacteriological examination of the samples to be taken from the respective mucous membranes, be at once recognized in the practice, as the animals treated no longer abort, and conceive under normal conditions, no efflux occurring during the course of pregnancy. Delusion may occur in the determination of the cure in such cases in which too strong a solution of the medical appliance caused an inflammation in the re-

gion of the mucous membrane. In doubtful cases an interruption of the treatment is advisable. Should a decrease in the inflammation be observed during the repeated inspections, the same may safely be attributed to the action of the medicine, otherwise the symptoms of the disease would continue or become more marked.

Should visible symptoms of disease have existed among the bulls before the commencement of the treatment, a cure has been effected when the inflammation of the penis and the foreskin catarrh have disappeared; but should there have been no visible symptoms of disease, it may eventually be proved in a practical manner that a cure has been effected, by letting the bull in question make a trial leap on a cow which is known to be healthy. If the former be still infected with the contagious matter, the cow will, within a very few days, be certain to show typical inflammation of the mucous membrane, together with the characteristic efflux. Such an experiment is not usually required, as experience has taught us that bulls may be considered cured after a four weeks' careful treatment.

As soon as the cure has been attested for all animals of a herd, it is necessary once more to cleanse and disinfect the cow-house and implements. The shoes of the cow-house employes must also be disinfected. It is better to burn all materials of no particular value, such as dusters, sweeping brush, etc.

The prognosis depends upon the degree and duration of the disease as well as on the character of the plague and the period at which treatment was begun. It is further determined by the arrangement of the cow-houses and the extent of the herds (more favorable in smaller ones), by the possibility of disinfection, and last, not least, by the coöperation of the owner. It has, therefore, been pointed out from different sources, that to ensure the success of any method of treatment, it is necessary to enlighten and instruct the cattle owner.

Since infectious vaginal catarrh does not generally grant immunity from further attacks, it will become necessary, besides the disinfection, to destroy the infectious matter which has

been emitted and to prevent a protraction of the plague after a cure has been effected, by preventive measures calculated to avoid new infection.

In order to obtain a permanent result, it is therefore advisable

1. To examine very carefully each newly introduced cow for infectious vaginal catarrh and to reject unhealthy animals.

2. To let each bull from a suspected infected area undergo a course of treatment before being allowed to cover.

3. To protect healthy bulls against contagion by rinsing their utricles with one liter (about one quart) of a warm 1 to 1 ½ per cent. solution of Bacillol or by introducing a 6 per cent. Bacillol ointment each time it has covered, even with an apparently healthy cow.

4. To place endangered herds under continuous health control.

5. To instruct the bull-keeper to carefully examine each cow before it is covered, and to firmly withhold the breeding-bulls from all diseased or suspicious cows and heifers.

Owing to the character of the disease, already some years ago the advisability of placing infectious vaginal catarrh in cattle on the list of plagues to be publicly notified and subjected to veterinary police measures, was matter of inquiry. In March, 1901, the Department for Agriculture at this place, received the opinion of the Royal Prussian Technical Deputation for Veterinary Matters, in which the latter expressed its opinion concerning eventual legal measures being taken.

The Technical Deputation for Veterinary Matters considered it imperious that the disease known as infectious vaginal catarrh and womb catarrh be restrained and contended against by legal measures. To make the application of veterinary police measures possible, an introduction of §§ 9 and 10 of the German Imperial Law against Plagues among cattle will be required. The owners of animals could easily satisfy these requirements, as the disease in its acute stage shows plain symptoms which cannot but rouse suspicion of an outbreak of the plague, if the sexual organs of several animals within a short space of time are af-

fects in the same manner. The owners of animals might also be informed of the symptoms, course and importance of the disease by means of popularly written pamphlets. Finally, the Technical Deputation proposed some additional provisions to those measures already applicable against vesicle eruption, being guided by the principle that these measures taken to suppress the disease should agreeable to its nature be somewhat milder and simpler. This deputation further suggested exclusion of diseased animals from copulation until a perfect cure and unsuspecting condition of such animals has been declared (or certified) by the official veterinary surgeon.

From another source it was proposed that there should be a periodical inspection, to be carried out by a veterinary surgeon, and furthermore exclusion of infected animals from breeding, for about 8 weeks for bulls and 10 weeks for female cattle, as well as separation and dislocation; closing of the cow-house, permission to transport these animals only for killing purposes; a slaughtering of the less valuable infected breeding animals; compulsory treatment; final disinfection of the litter, the dung-drainage, the cow-house implements, dusters, and the animals themselves; inspection by the bull-keeper of the cattle to be covered, and a control kept.

As yet, however, veterinary police measures against vaginal catarrh have been introduced only in the Grand-Duchy of Baden, and in the Duchy of Sachsen-Altenburg. Baden has very quickly withdrawn the conditions, partly because the owners of animals found them too harsh, and partly because the neighboring states did not follow its example. Nor did the legal measures prove satisfactory in Sachsen-Altenburg. It may be seen, without more difficulty, that such arrangements can be successful only when introduced by all neighboring states at the same time and under the same points of view.

According to my opinion, there is no doubt whatever that, in those countries in which the plague has not yet spread to too great an extent, suitable veterinary by-laws would materially assist the treatment and the combat. The symptoms and course

of the disease, with all its consequences, ought to be explained by means of public notices to the farmers, who should be compelled to report all cases.

The most important measure would be the directions for the treatment of diseased herds by a veterinary surgeon. That during the treatment of diseased animals they be not allowed to copulate. Should it be impossible to carry out this rule in severely infected areas, at least the healthy and healed bulls must be most strictly kept apart from all diseased or suspected female animals. The pasturing should be regulated and the withdrawal of diseased animals for breeding purposes prohibited. Finally, after a cure has been effected, a thorough cleaning and disinfection of the cow-houses should complete the extermination of the plague.

I am of the opinion that, in order to prevent great economical disadvantages, further measures should be desisted from with regard to the chronic progress of the plague.

My statements may be summarized as follows:

1. The etiology and nature of infectious vaginal catarrh have been clearly demonstrated.
2. The plague is curable.
3. All the individuals of a plague-stricken herd must be treated simultaneously.
4. The treatment would be materially assisted by the enlightenment of the owners and by suitable veterinary police measures.
5. After a cure has been effected, suitable precautionary measures must be observed, since getting over one illness fails to secure immunity for the future.

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THE second year of re-registration of practitioners with the Board of Examiners of Pennsylvania shows but few who have failed to qualify, and, at the recent meeting of the State Association, confidence was expressed in the satisfactory operation of the law.

THE subject of milk hygiene is sizzling in New York. Advocates of pasteurization among the dailies are numerous. A diet of cooked germs may be better than live ones, but that is not the rational way to purify milk. Prevent the organisms from gaining access to it.

PENNSYLVANIA RAISES THE REQUIREMENTS FOR ADMISSION TO MEDICAL SCHOOL.—Recognizing the advantage of a broader general education and the growing necessity of the prospective student having in addition special preparation for the study of medicine, the Board of Trustees of the University of Pennsylvania has decided recently to raise the requirements for admission to its medical school. These requirements include two years of general college training and in addition a certain knowledge of biology, chemistry and physics. According to the plan which has been adopted, the standard will be raised gradually, beginning with the academic year 1908-1909 and reaching the maximum 1910-1911.

VON BEHRING'S DEFENCE OF BOVOVACCINE.

EXCERPTS OF VON BEHRING'S PUBLICATIONS, "BOVOVACCINATION IN PRACTICE," TAKEN FROM A SEPARATE PRINT OF A CYCLUS OF LECTURES, PUBLISHED IN THE SECOND BOOKLET OF "COMMUNICATIONS OF THE BEHRING'S WORKS."

TRANSLATED BY DR. WILFRED LELLMANN, PROFESSOR AT NEW YORK UNIVERSITY.

As an introduction to von Behring's publications, I wish to make the following statements:—I think it would not be fair, if a reply from von Behring on attacks upon his method of bovovaccination should be retained from our colleagues, who perhaps read only the AMERICAN VETERINARY REVIEW. A discussion must not be one-sided. One cannot help gaining the impression that, ever since von Behring introduced bovovaccination into practice, quite a number of professional men claim not only the glory of having improved this method greatly, but also pretend that they were ahead of von Behring as far as in originating his so-called Jennerisation method. However, the impartial observer cannot help admitting that many publications against von Behring's bovovaccination arise from personal animosity against the inventor or perhaps from personal feeling for themselves, *z. e.*, the wish of glorifying themselves.

Personal feeling of any kind should be entirely excluded when judging a method as for its efficacy and usefulness.

I wish to state that I have been experimenting with Bovovaccine for two years and a half, and that my experiments on quite a number of animals of the bovine species under my personal observation have proved to me beyond any doubt, that in bovovaccination we certainly have an immunizing method against tuberculosis. It must be evident to every logically thinking man that immunity of equal degree cannot be produced in all vaccinated animals and that absolute immunity does not exist, and furthermore that a certain number of failures are liable to occur in practice, due to improper handling of the vaccine and lack of judgment.

I do not mean to say that the present method of bovovaccination could not be improved upon. I am sure it can, and I know it will be simplified in the near future as to its way of being used, and most likely with still a better prospect as to the immunizing quality of the vaccine.

There could be added many more statistical figures to those already published; however, this would not materially change the general impression. Therefore, I shall confine myself to the statistics, which refer only to artificial infection of tuberculosis in vaccinated and non-vaccinated animals.

* * *

I am indebted to Vallée, the director of the renowned veterinary school at Alfort, for these experimental bovovaccination statistics. Following, I shall cite as literally as possible Vallée's report on a test made with 40 bovines and published by him in various journals. The passages which are here of interest read as follows in the German translation:

"On July 13, 1904, the Société de Médecine Vétérinaire Pratique readily accepted a proposition of the General Secretary, Mr. Rossignol, of Melun, to carry on an experiment with numerous animals, according to an accurately worked out test-plan, which would give us the means of obtaining a clear opinion as to the value of Behring's bovovaccination.

The experiment was commenced in September, 1904, and included the examination of the *innocuousness* of the method, its *efficiency*, and, should these be proven, the *duration* of the produced immunity.

* * *

Behring's Bovovaccine is marketed in small tubes; it is a yellowish powder consisting of dry bacilli of the human type, which are still capable of infecting guinea-pigs. (1) The operator has to prepare the vaccine by emulsifying it thoroughly in sterilized water.

In Melun, we have vaccinated only animals which proved to be healthy after having submitted to a proper tuberculin-test. These animals were carefully protected during the experimental

period from any possible spontaneous infection, and stabled in a disinfected place where thus far no cattle had been kept.

* * *

(1) However, the vaccines injected at Melun were, according to a test in which several accurately weighed off doses (three weeks prior to the expiration of their stated applicability) were found to be incapable of infecting guinea-pigs.

* * *

A year after the first vaccination and 9 months after the second, 15 of the vaccinated animals were dissected, 13 of them having previously been tested, and 2 without this test.

In none of these animals have we found even the slightest trace of a tuberculous change attributable to the preventive vaccination.

In April, 1905, a tuberculin test proved 4 bovoc vaccinated animals, kept at my Alfort laboratory, free from infection. Even more, the bronchial and mediastinal glands did not contain any bacilli, which was proven by test-inoculation into guinea-pigs. These glands would have been virulent, if the vaccines injected intravenously several months previous had been injurious.

On the basis of all these proofs, Rossignol and I have concluded that: "bovovaccination is harmless for animals which, during the time required for the completion of the immunity, are protected from all accidental infection."

Since the conclusions of the experiments at Melun, I have been able to ascertain, that Bovovaccine does not always possess the same degree of virulence for guinea-pigs. Consequently we must assume, that the results will not be invariably the same in cattle; it is therefore understood that, although the bacillus is of the human type, different results as to the harmlessness of the vaccine for guinea-pigs can be obtained by different experimentors.

* * *

In order to determine the resistance of the bovoc vaccinated cattle against tuberculosis infection, the animals were subjected,

in various ways, to a control infection, three months after vaccination.

Two bovoc vaccinated and two new control animals were placed with cattle suffering from open tuberculosis. Six bovoc vaccinated and six control animals were infected by intravenous inoculation of 4 milligrams each of a highly virulent bovine bacillus. Seven other bovoc vaccinated, together with seven control animals, were vaccinated subcutaneously with bovine tubercular matter. The result of these test-series, 170 days after the control infection, was:

A. *Test-series of Subcutaneous Control Infection.*

(1) Extensive lesions of the prescapular lymphatic gland in the 7 control animals and in one vaccinated animal.

(2) Dissemination of the infection over the lungs in 5 controls, while the inner organs of all bovoc vaccinated animals are free from tuberculosis.

B. *Test-series of Intravenous Control Infection.*

(1) Death of 3 of the 6 controls, 29, 34 and 37 days respectively after the test, from very extensive miliary tuberculosis.

(2) Upon killing the 3 remaining, highly diseased, control animals, they show generalized tuberculosis.

(3) The bovoc vaccinated animals at the time of slaughtering were found perfectly healthy clinically and did not even show rises in the temperature during the months following control infection. In two of them, there were found only 2-4 minute tubercles in the bronchial glands; in all of them, the lung tissues were found to be perfectly free from tuberculosis.

C. *Test-series of Natural Infection Conditions.*

(1) In the bovoc vaccinated animals which were not killed, a very slight reaction to tuberculin.

(2) In the control animals, pronounced tuberculin reaction, and upon dissection severe tuberculous changes of the intestinal organs and of the lungs.

* * *

The report proves under all circumstances, that in bovoc vaccination itself we have a method of checking tuberculosis.

This method which proved itself efficient upon scientific experimental basis, was introduced into practice about five years ago.

But I have already intimated, that even in the event of an unfavorable result of Vallée's experiments, nothing contrary would have been proved against my Jennerization method in the opinion of scientific investigators.

In connection with my explanations regarding the virulence determination of different types, I have demonstrated to you, what enormous multipla of the deadly minimal dose may be contained in fractions of a milligram of my Taurin culture.

Supposing I claimed having detected a method of immunizing guinea-pigs against 100 times the amount of the fatal minimal dose of my Taurin, would my claim be questioned seriously, if, nevertheless, some one should succeed in causing a fatal infection in one of my immunized guinea-pigs by using thousand or hundred thousand times the amount of the fatal minimal dose of my Taurin?

There are people to whom the question of the relative degree of immunity is still a puzzle. Judging the question, whether an immunizing method is of practical value, our opinion ought not to be governed by the idea that we may yet succeed in infecting an animal artificially by the virus against which it was immunized. It certainly means a great progress, if we succeed in protecting the majority of the vaccinated animals against the dangers of infection to which they are continuously exposed.

The idea that a method of preventive vaccination must confer absolute immunity in order to be of practical use might have been pardonable twenty years ago, before it had been proven, through the serum-therapeutical researches, that we must stop to consider the terms "immune" and "susceptible," absolutely disharmonizing contrasts. There is no absolute immunity, neither does there exist an absolute susceptibility. There are only graduated differences in the degree of reaction upon the introduction of infectious material; and if we bear in mind practical immunization, then our opinion regarding the

utility of a preventive method must not depend upon the theoretical demands of academicians, but we must content ourselves with what is attainable at the present time.

To-day, it must be considered as a sign of scientific retrogression if, for instance, Moussu in the *Semaine Medicale* bases his unfavorable criticism of bovovaccination upon the indisputable statement that through a sufficiently severe experimental infection bovovaccinated animals will succumb to tuberculosis, and that in agricultural practice at times localized tuberculosis can be found in the animals bovovaccinated according to my method.

With his criticism, Moussu commits the same error which was made about 23 years ago by Koch and his then disciples, Loeffler and Gaffky, when, in the State Bureau of Health, they tested experimentally Pasteur's immunizing method for the prevention of anthrax.

I am far from assuming that Moussu's criticism of my method will create as strong an impression upon tuberculosis investigators as that caused for some time, 23 years ago, at least in Germany, through Koch's authority, to the discredit of Pasteur's preventive vaccinations. This I fear all the less, since Moussu does not base his criticism upon his own experimental work, as did Koch, but has obtained his arguments from the reports of other authors, a number of whom, it is true, are somewhat better versed in the subject than he is himself, but who, to my knowledge, are not quite up to date in matters concerning researches on tuberculosis.

However, recurring logical errors of theoretical critics, which Moussu's criticism of my bovovaccination has in common with Koch's, Loeffler's and Gaffky's criticism of Pasteur's vaccination against anthrax, make the recollection of the Pasteur-Koch episode appear to me very useful and instructive just at the present time.

* * *

About three years after the introduction of Pasteur's vaccination against anthrax of sheep, Koch made the assertion that

the so called successful results of Pasteur's method could not stand the test of exact science. It could and must indeed be admitted, that with a certain manner of testing the immunity, that is, if a small amount of the virus were injected under the skin, according to Pasteur's directions, the vaccinated animals would remain alive, while not vaccinated control animals would die of anthrax; but that this proved nothing as to the usefulness of the vaccination in agricultural practice; for in naturally infected sheep, infection does not occur through the skin, but the digestive apparatus, by anthrax spores swallowed with the food. If this infection method be imitated experimentally in such a manner as to feed anthrax spores in doses which would prove fatal in every control sheep, then the vaccinated sheep would die as well. Therefore, the conclusion was to be drawn, that the statistics pretending to prove the practical value of Pasteur's method of preventing anthrax must be fallacious.

"Since (it is stated in Vol. II of the Communications from the State Bureau of Health) a positive immunity against anthrax cannot be obtained without material losses through the preventive vaccination according to Pasteur's method, and since this immunity proved by losses is but an imperfect protection against natural anthrax infection, the advantage of the thus far practiced method of preventive vaccination is to be considered as very doubtful."

Already prior to this time (1882) Koch had published the following statement with reference to preventive vaccinations according to Pasteur's method:

"The experiences made so far should prove an earnest warning not to be too hasty in applying scientific deductions to practice. Pasteur's hopes in connection with the preventive vaccination against fowl cholera have apparently not materialized, for nothing is known of vaccinations made with mitigated microbes of fowl cholera. The preventive vaccination against anthrax has not been found of practical value either, at least not for the present, and the preventive vaccination with mitigated pathogenic bacteria has so far not proven successful. If,

at the Genf Congress (1882), Pasteur has been celebrated as a second Jenner, this has been done somewhat too early, and in the burst of enthusiasm it has evidently been overlooked, that Jenner's glorious discovery has not benefited sheep, but mankind."

* * *

As far as I know, Pasteur's response to the continuously hostile attitude of Koch toward the former's preventive vaccinations, was the remark that such unfavorable criticisms tended to reassure him as to the harmlessness of the competition of Koch's school in the realm of vaccination therapy.

I too believe that I need not fear serious competition from French scientists concerning my tuberculo-therapeutic work, as long as critics of Moussu's type are allotted a conspicuous place in reputable medical journals for their retrogressive comments.

I do not know whether Moussu is convinced of the practical usefulness of Jenner's small-pox vaccination. If he is, would he cease to consider the introduction of the cow-pox vaccination a useful and enlightening achievement, if it could be proven that properly vaccinated human beings still could be made sick and be killed by experimental injection of a large amount of pox virus into the circulation?

Moreover, at the Marbach Estate I have cattle which stand infections with very large quantities of the strongest tubercular virus perfectly, and I take pride in the fact that I have shown how high-immunizations against tubercul6sis can be accomplished with great positiveness by the continuous treatment with a systematically increased dosage and with an infectious material of gradually increasing virulence. Other investigators, for instance Malm, states that he has in no way succeeded in infecting cattle highly immunized according to my method, with large doses of Perlsucht virus. Any one who is able to spend sufficient time, money and work on the problem of highly immunizing by bovovaccination, could convince himself of the possibility of almost absolutely immunizing individuals of the bovine species.

THE "FORGER" AND "CRAB."

BY WM. DOUGHERTY, D. V. S., BALTIMORE, MD.

Sometime ago I offered a prize of twenty-five dollars for an essay on the "Forger" and "Crab"; my object was to see what thought veterinarians had given to the subject. There were several who made reply, but I do not think any of them had given the subject much thought or investigation.

I will now attempt to describe a forger. He is generally a low-headed, flat-rumped horse, with a low, level gait; is not inclined to break. When going at a moderate pace, his hind feet drop into the tracks of the front feet; some fit directly in the tracks of the front foot; some half an inch beyond; some half an inch back. They do not all forge that so track.

Now, when you urge the horse to greater speed he straddles more behind, and the tracks of the hind feet go outside and beyond the tracks of the front feet. A horse of this gait generally has some speed.

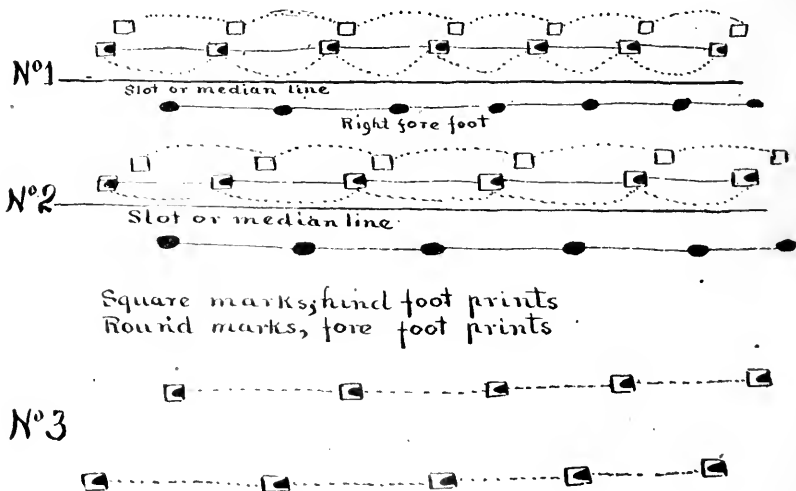
The Side-Stepping Forger.—This is generally a short-backed, round-rumped, high-headed horse, with many gaits. He trots, ambles, spanish walks, paces, single-foots, lopes and gallops, and, as I heard a man say once, he dog-trots, and when he dog-trots is the time he forges. The side-stepping or dog-trotting is well illustrated when he is under saddle, with a man in it. When in harness he will oftentimes go all the gaits in a block.

The "Crab."—This horse comes in all forms and shapes—the heavy draught horse, coach horse, and general utility horse. You will not find a trotting horse that is a "crab."

The hind feet follow the near fore foot; the right fore foot wings off to the right, the right hind foot often fits in the track of the near fore foot; the left hind foot a little to the left. When this condition exists you have the inveterate "forger." The right hind foot is often worn down to the quick just above the toe clip. The "crab" will also make three foot prints side by side, and he does not forge. When the "crab" has a little

speed he will carry the near hind foot beyond the foot prints of the near fore foot and the off hind foot. There is in some horses a little variation from the above description.

External Symptoms of the "Crab."—A horse will be sent to you to have his teeth dressed, the owner saying that he pulls on one line. You examine his mouth; you do not see any reason why he should pull on one line; his teeth are in fairly good condition. However, you dress them; he is sent back to you again with word that you must have missed some sharp corner, as he still pulls on one line. Now you get in the wagon and drive him; you will find he pulls on one line, and will also take you across the road; he may also forge, or not, as the case may be. When driving him you will notice he hugs the near shaft; also, if you look sharp, you will notice that the back strap of the harness does not follow the spinal column. If you happen to be driving in a street-car track where there is a



No. 1. Foot-prints of a crab-gaited horse, with no speed (an inveterate forger).

No. 2. Foot-prints of a crab gaited horse, with some speed.

No. 3. Foot-prints of a level trotter, who forges at half speed.

The three gaits constitute the "Crab" and "Forger."

groove for the cable, you will find that three feet go on one side of the cable slot and one on the other side. If you get down out of the wagon and run your fingers over the lumbar region you will find immobility of the region. If he is in double harness on the near side, he will hug the near trace; if on the off side he will hug the pole. If you have no car tracks with cable slots to try him in, take him on a soft road after a shower; you will there see the foot prints.

After you get a little accustomed to looking for a "crab," you can tell him anywhere. There are many "crabs" in thoroughbred race horses. The "grabbing" of the near fore foot with the off hind foot causes many falls in races.

Now I have described all the crab-gaited horses on the near side; that is, I have never seen one that is affected on the off side.

Cause of the Crab-Gaited Horse.—Many years ago, I used to hold a post-mortem on every horse I lost. In the fertilizer yard there was a pile of bones one hundred feet long by thirty feet high—a small mountain of bones. While waiting for my subject to be skinned, I amused myself by looking over the bones. I was struck by the great number of lumbar vertebræ that were ossified, and I never found any but those ossified on the near side. That passed along for sometime. I was called to treat a horse with sore throat; he had what I diagnosed as "mumps," with a scar in the region, indicating that it had been opened before. When I thought it proper I opened it again, and got pus that was characteristic of "mumps." In putting my finger in the opening I pulled out a head of timothy with about four inches of stalk. Now, this horse worried me. His temperature was about 104° , with the lumbar region immobile. His lungs were clear. However, he made a recovery with a stiff back. When he was well enough I rode after him; he pulled on one line, drove across the road, hugged the near shaft, and he had a lateral curvature of the spine. I followed that cue up and found upon post-mortem examinations of several cases that these horses that were inveterate "forgers" or "crabs," had os-

sification of the lumbar vertebræ. I have never found one so affected on the off side. I cannot recall a case of a horse that wore his hoof to the quick on the near hind foot, always the off.

THE HORSE THAT HITCHES.

I want to make another observation on the horse that hitches or the horse with a short leg. The hitching horse is quite a common one, and I have never found any one that could give a plausible reason for it.

External Appearance.—A horse with a sloping rump, with the internal angle of one ilium about half an inch higher than the other. The side on which the ilium is the higher is the side on which the leg is shorter.

Upon examination of the ischium and pubis, you will find that the union has not been made in juxtaposition; that one side is about half an inch higher than the other; hence the deformity.

Remedy.—Shoe the short leg with a thicker shoe.

"THE IOWA-NEBRASKA VETERINARY BULLETIN" has been taken over by the Missouri Valley Veterinary Association and the name changed to the *Missouri Valley Veterinary Association Bulletin*. The former editors have been retained and three new ones added. It has a subscription list of 500, which may be expected to speedily double or treble in its wider sphere. The REVIEW extends its congratulations and will look forward to its monthly visits with even more pleasure than formerly.

TO STRENGTHEN THE CONNECTICUT LAW.—A letter from Dr. B. K. Dow, Secretary of the Connecticut Veterinary Medical Association, under date of Feb. 27, says: "We are working to have our present veterinary law strengthened by an amendment at this session of the Legislature. The bill came up for a hearing to-day before the Judiciary Committee. Drs. J. H. Kelley, P. T. Keeley, F. F. Bushnell, R. D. Martin, R. P. Lyman, Thomas Bland, J. H. Gardner and B. K. Dow appeared before the committee in support of the measure. We feel very much encouraged at the present outlook, and we are going to keep at this law until we get one as strong as any state has in the Union."

A SIMPLE METHOD OF APPLYING THE METRIC SYSTEM TO PRESCRIPTION WRITING.

BY WM. W. YARD, D. V. S., U. S. VETERINARY INSPECTOR, DENVER, COLORADO.

The popularity of the metric system in prescription writing with our brother practitioners in human medicine, due to its correctness and simplicity, has become so universal that I offer a simple method to the veterinary profession of adopting the system to our needs.

A prescription written in this system is much simpler and is much more correct than that now in use, and it strikes the reader at once with the impression that the author is a learned and progressive practitioner.

A metre (39.37 inches) is one ten-millionth part of the distance from the pole to the equator.

A gram is the weight of one cubic centimetre (c.c.) of water at 4° Centigrade, at its greatest density.

Gram and cubic centimetre are therefore terms of like value; the former referring to metric weight, the latter to metric measure. In prescription writing, the cubic centimetre may be taken as a unit for fluids, just as the gram is for *solids* or *fluids*.

TABLES.

(These are to be understood but not memorized.)

Metric Weights.

	Gm.
Milligram, $1/1000$ of the unit, written	.00j
Centigram, $1/100$ " " " "	.0j
Decigram, $1/10$ " " " "	.j
Gram, the unit.	

Metric Measure of Capacity.

Millilitre (cubic centimetre)	$1/1000$ of the unit.
Centilitre, - - -	$1/100$ " " "
Decilitre, - - -	$1/10$ " " "
Litre (1000 c.c.—about a quart)—the unit.	

Relative Values of Apothecaries' and Metric.

Practically, one gram is equal to 15 grains Troy (more exactly 15.432), therefore :

Gr. j = .06 grams, exactly .06479

Dr. j = 4.00 " " 3.8874

Oz. j = 31.00 " " 31.103

A two-ounce bottle is supposed to contain 16 doses of a drachm (teaspoonful) each. In reality, however, 15 is nearer the fact, since the average teaspoon holds more than a drachm.

If, now, we order a two-ounce bottle with a teaspoonful dose, each dose to contain one grain of any substance, the whole amount of the substance will be fifteen times one grain (fifteen doses), or fifteen grains; which is just equal to one gram.

So, for each dose of a grain or minim let us order a gram of the substance desired, and the prescription is complete. Example :

	Gm.
℞ Ammon. carb. (gr. j in each dose)	1.00
Ext. scillæ fl. (℥ iss in each dose)	1.50
Ext. senegæ fl. (℥ v " " ")	5.00
Tr. opii camph. (℥ xij " " ")	12.00
Aq. cinnamomi (ad ℥ ij),	ad 60.00
M. S. Teaspoonful at a dose.	

Now, if we wish to order a four-ounce bottle with a dessert-spoonful dose, the same holds true: the bottle and the dose being each twice as large as in the case just given. With an eight-ounce bottle and tablespoonful dose, the same rule of course applies. Example :

	Gm.
℞ Ext. scillæ fl. (℥ j in each dose)	1.00
Ext. glycyrrh. fl. (℥ x " " ")	10.00
Aq. laurocerasi (℥ xl " " ")	40.00
Aq. (ad ℥ viij)	ad 250.00
M. S. Tablespoonful at dose.	

If it is desired to give a two-ounce bottle with a tablespoonful dose, it is merely necessary to order one quarter as many grams as before; the dose, a tablespoonful, being four times the usual size. If a four-ounce bottle and teaspoonful dose, order

twice as many grams as usual; if, on the other hand, it is a four-ounce bottle and a tablespoonful dose, order half as many grams as usual. If a six-ounce bottle and a teaspoonful dose, order three times as many grams as usual.

It is needless to suppose more cases; the principle will be evident to all. Example:

		Gm.
R	Ac. hydrocyan. dil. (℥ ss in each dose)	1.00
	Ext. ipecac. fl. (℥ ¾ " " ")	1.50
	Syrupi scillæ (℥ xxv " " ")	50.00
	Mist. glycyrrh. comp. (ad ʒ iv)	ad 120.00
M.	S. Teaspoonful at dose.	

Now, let the reader complete by the Apothecaries' system the preceding prescriptions, and it will be seen at once how much simpler is the metric system just described. No multiplying of grains or minims, and reducing to drachms, etc., is needed, and a glance at the column of grams shows instantly the number of grains in each dose. Example: In ordering an eight-ounce bottle with a drachm dose, each dose to contain one grain of opium, the total amount of opium ordered would be 64 grains; whereas, by this metric method, the prescriber would write for 4 grams, which is, exactly, equivalent to 61.728 grains.

There remains one subject to be considered. The apothecary, in filling prescriptions for grams, puts the bottle on the scales and balances it with shot; then puts in the required weight, and pours in the medicine till it balances, whether (liquid or solid); then another weight, and so on.

Now, suppose we wish to order some fluid of a specific gravity quite different from that of water—syrup, for instance. A given weight—say sixteen grams—of syrup does not have the same bulk as sixteen grams of H_2O , but is only equal in bulk to twelve grams of water, since syrup is one-third heavier than water. Hence, it is evident that, desiring a certain bulk of syrup in our prescription, we must order one-third more of it than we would if a fluid having a specific gravity like that of H_2O .

In the case of glycerine, which is one-quarter heavier than water, we must order one-quarter more.

The two corrections which I have mentioned for glycerine and syrups are the only two that need be made in prescription writing, as the difference in bulk of other fluids is so slight they may be ignored.

If the prescription is for liquids alone, we can write in cubic centimetres. Example:

		C.c.
R	Tr. nucis vomicæ (℥ iij in a dose)	3.00
	Tr. cinchonæ comp. (dr. j " " ")	60.00
	Syr. sarsaparillæ comp. (dr. ij " " ")	120.00
	Aq. (ad ℥ viij)	ad 250.00
M.	S. Tablespoonful at dose.	

If solids and liquids are both needed. Example:

		Gm.
R	Pulv. rhei (gr. v in a dose)	5.00
	Na. bicarb. (gr. x " " ")	10.00
	Bism. subnit. (gr. xij " " ")	12.00
	Syrup tolu. (dr. j " " ")	60.00
	Aq. (ad ℥ viij)	ad 250.00
M.	S. Shake. Teaspoonful a dose.	

This can be applied to powders, pills, and similar preparations. Just order the prescription on a basis of fifteen powders or pills; then each grain desired in single pill or powder will correspond with one gram in the sum total.

There is one thing to remember in writing for dry preparations, namely, for every grain we order in a dose, we get about 1 1/35 grains; since one gram equals 15.432 grains.

"I HAVE BEEN A READER OF THE REVIEW so long that it seems as if I were one of the many stockholders and that we have you employed to run it for us, and I like the way you conduct it so well that I enclose draft of three dollars as my contribution toward keeping you another year. Please accept it with my best wishes. Hope the rest of the stockholders will respond promptly, and thus encourage you to keep up your estimable labors for years to come." (*W. C. Hanawalt, M. D. C., Galesburg Ill.*)

MODERN VETERINARY METHODS.*

BY WALTER J. TAYLOR, D. V. M. ITHACA, N. Y.

DIFFERENTIAL DIAGNOSIS.

ANTHRAX.

Anthrax is an infectious disease occurring sporadically and in epizootics in herbivora and omnivora. It is communicable to nearly all warm-blooded animals and to man. It is characterized by the presence of *Bacterium anthracis* in the diseased tissues or liquids, also by an enlarged spleen, blood extravasations and by local gangrene.

Anthrax is among the oldest infectious diseases of animals. Homer, Plutarch, Livy and others have given descriptions of the disease in epidemics and epizootics occurring before the Christian Era. It is now generally believed that the plague of boils, as described by Moses, "visiting the Children of Israel" during their sojourn in the wilderness was an outbreak of anthrax, referred to in modern medicine as malignant pustule when occurring in the human family. It was designated by the Arab physicians as the "Persian Fire." In the literature of the fifteenth, sixteenth, seventeenth, eighteenth and nineteenth centuries extensive outbreaks are mentioned.

Much new information concerning anthrax was acquired during the fifth decade of the last century. In 1885, Pollander announced the discovery, which was first made by him in 1849, of minute unbranched rod-shaped bodies in the blood of cattle dead of anthrax. A long series of observations culminated in Robert Koch's careful description of the morphology of the specific germ in 1875.

Anthrax is a widely disseminated disease. It has occurred on the continent in Europe, Eastern and Central Africa, England, Australia, India and the United States. Very few, if any, countries may be said not to have suffered from the disease. The Eastern part of America seems to have been most affected. A knowledge of the specific infecting organism, the proper disposal of the carcasses and preventive inoculation have done much in stamping out the disease in this country. Certain infected areas, however, suffer sporadically for a shorter

*This series of articles was begun in the December REVIEW, the first installment being on "Diagnosis;" that for January treated of "Differential Diagnosis," with "Tuberculosis" as the special subject; "Glanders" in February, and "Rabies" in March.—[EDITOR].

or longer period, owing to the high degree of resistance possessed by the spores of the organisms.

Symptoms.—In anthrax the symptoms vary not only in the different species of animals but also in different individuals. The most characteristic features of the disease are the suddenness of the attack, the grave general disturbances and the high elevation of temperature. Anthrax has been classified, according to its course, as peracute, acute and subacute.

The peracute or apoplectic anthrax gives rise to symptoms of cerebral apoplexy. The animal becomes suddenly ill, staggers about for a brief period and falls. There is often a bloody discharge from the mouth, nostrils and anus. Death usually takes place in from a few minutes to an hour. Sheep and cattle are most frequently affected with this form of the disease. During the beginning of an epizootic they are often found dead.

The disease runs a somewhat slower course in the acute form although not usually lasting to exceed twenty-four hours. There is a rapid rise of temperature of 5, 7, or 8° F. The rise in temperature is accompanied either with signs of congestion of the brain or of the lungs. Occasionally premonitory symptoms are observed, consisting principally of digestive disturbances and general depression. In cattle and sheep and generally in horses, the disease assumes the form of a septicæmia, *Bacterium anthracis* being present in the blood before death. If the specific organism cannot be found in the blood of cattle and sheep before death it is safe to conclude that we are not dealing with anthrax.

In the subacute form commonly known as anthrax fever or intermittent anthrax, the symptoms are more sharply defined and the course is longer. Digestive disturbances, especially colics, generally complicate the symptoms. Epizootics which have arisen in the peracute or the acute type generally terminate in this form.

External manifestations.—In horses and swine the first symptom of the disease may be a localized swelling. This is especially true of swine, and the specific organism may not be encountered in the circulating blood of this species of animals. In horses these swellings may result from a cutaneous infection. Circumscribed cutaneous swellings, hot and painful, are at first noticed. These become cold and painless, doughy and with a tendency to become gangrenous.

In swine local lesions of the larynx and pharynx are at first noted. Swelling of the intermaxillary space takes place. This

may spread along the trachea, giving rise to difficulty in swallowing and dyspnoea. In any case the anthrax bacteria may be found in the œdematous fluid contained in these swellings.

Differential Diagnosis.

Anthrax is to be differentiated from certain specific diseases as symptomatic anthrax (black-leg), malignant œdema and septicæmia hæmorrhagica. It is equally important not to confuse anthrax with certain non-specific disorders and accidental causes of death. Among these may be mentioned poisoning, cerebral apoplexy, pulmonary congestion, heat apoplexy, death from lightning, or acute gastro-intestinal inflammations. The suddenness of the attack, the severity of the specific cases and the short duration of the disease may tend to a mistaking of anthrax for some of the above factors.



Drawing showing the method of making a blood smear for purposes of examination.

Finding the Bacterium anthracis in the blood of affected or dead animals.—Considerable care is to be observed not to mistake a certain saprophytic bacterium which develops rapidly in the blood of animals shortly after death. These organisms resemble very closely the anthrax bacterium, but are a little longer and not quite so broad. A drop of blood is secured from the suspected animal and smeared upon a glass slide. By touching the drop with the end of a perfectly clean microscopical slide a smear is easily made by drawing it over the surface of an equally clean slide, thus making a well-spread film upon the second slide. Allow it to become thoroughly dry and stain with any of the aniline dyes. (Jenner's stain has been found especially satisfactory.) Wash quickly and lightly and dry as rapidly as possible. This is best accomplished by blowing vigorously upon the film to remove the water. It is then ready for examination. The anthrax bacteria will appear as short rods with perfectly square ends, of a bluish color and surrounded by a capsule. Occasionally these rods appear in the form of chains

It has been found that not infrequently it is very desirable to make cultures from the blood and tissues of suspected animals before diagnosis is pronounced. This is easily accomplished. With a sterile wire loop smear a loopful of blood or a little tissue upon the surface of a tube of slanted agar. It is then kept at a temperature of 35–37° C. for twelve to eighteen hours. If anthrax bacteria are present an abundant growth will be observed after that time. On the other hand, if the organisms supposed to be anthrax bacteria were the putrefactive germs no growth will be observed, as these are strict anærobes and will not grow in the presence of atmospheric oxygen. If upon examination of the growth anthrax bacteria are found the diagnosis is made doubly sure.

Post-mortem findings.—On account of the high degree of resistance possessed by the spores of the anthrax bacteria, *post-mortems should in no case be made except where diagnosis can be made in no other way and where excellent facilities are at hand or easily procured for thorough disinfection.* A room provided with a cement floor is much to be preferred. Where the specific infecting organism is demonstrated in the blood of animals suffering from suspected anthrax, it is unwise to perform post-mortems upon dead animals as spores are formed as soon as the organisms are exposed to the atmosphere. If it is deemed necessary to hold an autopsy, the following conditions will be revealed in a case of well defined anthrax.

Hæmorrhages varying from petechiæ to blood extravasations will be found in the submucous, subserous and subcutaneous tissues. The capillaries are distended. The lymphatic glands may be hæmorrhagic or œdematous. The muscles are usually darker than normal. In the larger cavities a sanguineous fluid is generally found. The spleen is considerably enlarged, the pulp soft, of a dark red color, the capsule is tense and may be sprinkled with ecchymoses or small areas of hæmorrhage. The liver and kidneys are highly congested and enlarged. The contents of the intestine may be bloody. The lungs are greatly congested. The mucous membrane of the pharynx and the opening of the larynx is often so œdematous that stenosis of the larynx takes place. Extravasations of blood may occur in the anterior chamber of the eye and under the retina. The blood is dark, having a tarry or varnish-like lustre and does not coagulate readily.

Disposal of the carcasses of animals dead of anthrax.—In the disposal of carcasses of animals dying of anthrax, the utmost

care and thoroughness of destruction should be carried out. The safest and most efficient method consists in burning. This is quite easily accomplished when plenty of dry wood is available. In case burning cannot be carried out and the animals have to be buried, they should be buried deep enough to insure safety. Such animals should be buried at least ten feet under the ground and the carcass covered with a thick layer of quick lime before the earth is placed thereon. Inefficient means of disposal of the dead animals may do much toward the spreading of the disease.

Differential Stain.—The blood of animals dead of anthrax possesses a peculiar staining property, which was first described by M'Fadyean and which he considers of value in the microscopic diagnosis of the disease. The method briefly stated is as follows:

Place a small drop of blood on a clean slide and quickly spread with a platinum needle until it covers an area about 12 mm. in diameter. Protect from dust and allow to dry thoroughly. Heat the preparation in a small flame several times until too hot to be borne by the skin in the palm of the hand. After cooling, stain a few seconds with a one per cent. aqueous solution of methylene blue, after which pour off the free stain and dry quickly and thoroughly, after which it is ready to mount in balsam. Upon microscopical examination there will be revealed an occasional leucocyte and the anthrax bacteria. The nuclei of the leucocytes will be stained a greenish-blue tint, while the anthrax rods are stained blue. *The peculiarity of the reaction lies in the color of the amorphous material which is present between and around the bacteria.* This material presents itself in the form of coarse or fine granules of a violet or reddish-purple color, which is in sharp contrast to the tint of the bacteria or the cell nuclei, especially with brilliant lamp or gas light. This reaction is not observed where the putrefactive organism alone is present. If anthrax bacteria and the saprophyte are both present the peculiar coloring is seen around the anthrax bacteria only.

Owing to the fact that the spores produced by the anthrax bacteria have the power of resisting extremes of temperature and atmospheric variations, it is of vital importance that every possible precaution be taken to prevent the spread of the disease. In those affected localities where the disease occurs sporadically protective inoculation may be resorted to as a means of checking a recurrence of the malady from year to

year. Several methods are available by which a certain degree of immunity may be obtained through protective inoculation. These subjects, however, will be treated in subsequent articles.

(To be continued.)

"WATER PEARL," a three-year-old thoroughbred stallion for which \$100,000 had been refused, died at Sheepshead Bay, March 10, of acute enteritis, with a small rupture of the pyloric portion of the stomach. The horse was insured for \$25,000.

THE NEBRASKA VETERINARY LAW.—On January 17 the House recommended for passage a bill amending section 4 and section 9 of the law now in force. This bill was not discovered by any of the veterinarians and so no one appeared before the committee of the House on Medical Societies who recommended it for passage. The bill was then discussed by the House and was recommended for passage by that body. The legislative committee arrived in Lincoln on Monday morning, January 21, and began active work. They canvassed the situation thoroughly and immediately became in touch with the veterinarians throughout the state. It was soon discovered that it would be best to call into service the majority of the veterinarians in the state, so all were communicated with by telegraph or telephone. The result was that on Wednesday this bill was killed by an overwhelming majority. On Thursday, the 24th, the bill introduced in the Senate came up before the committee and after a liberal discussion by the lawyers for the opposite side, and with the aid of our attorneys, and a large number of our graduates being present from all over the state, this bill was likewise recommended to be indefinitely postponed. So far we have stood our ground nobly and it was due to the solid front that our graduates presented, showing the harmony existing in our association. Every member did his very best to bring about the desired results. Nowhere in the West has ever such an overwhelming victory been achieved as in the State of Nebraska. Too much credit cannot be given to the efficient committee on legislation, who worked until early morning, sacrificing their business interest and stayed on guard, regardless of the condition at home, until everything was safe. We owe this committee our hearty thanks. The members of the committee are Drs. Simonson, Jensen and Anderson.—(*Iowa-Nebraska Veterinary Bulletin, Feb.*)

REPORTS OF CASES.

"Careful observation makes a skillful practitioner, but his skill dies with him. By recording his observations, he adds to the knowledge of his profession, and assists by his facts in building up the solid edifice of pathological science."

FURTHER CONSIDERATIONS OF NUCLEIN AS A THERAPEUTIC AGENT IN VETERINARY PRACTICE.

By E. R. VOORHEES, D. V. S., Somerville, New Jersey.

Two years ago I called the attention of the veterinary profession to Nuclein as a means of producing leucocytosis and phagocytosis by intravenous administration. Since that time, I have used the remedy whenever a favorable opportunity presented itself, but my conservatism has prevented me from abandoning the generally recognized methods of treatment, and Nuclein has been reserved in many cases until I became alarmed at my patient's condition, and then used as a last resort. This, it seems to me, is a very severe test, but it has accomplished results that at times seemed almost marvelous.

Lowit studied the effects of various albuminous and organic principles injected into animals, finding hypoleucocytosis followed by varying grades of hyperleucocytosis from peptone, pepsin, nucleinic acid, nuclein, etc.

That there is a rational basis for the employment of artificial leucocytosis in certain diseased processes there remains no doubt, as both the phagocytic and bactericidal powers of the blood are increased thereby; yet I would not advise the administration of any remedy that would excite continuous leucocytosis, but better administer it at the commencement of a disease in an effort to abort it, or if not successful in this, wait until the crisis has arrived and then use the remedy to tide the patient over the danger point.

I will not consume your valuable space by enumerating a great number of cases treated by Nuclein injections, but will select four that will give the reader a general idea of how I have used the remedy in my practice:

About one year ago I was called upon to treat two cases of broncho-pneumonia following an attack of influenza, among a carload of horses belonging to Mr. G. A. Van Doren, of this city. I am selecting these two cases, as they appeared to be as near alike as two cases could possibly be, and by way of experi-

ment I used Nuclein on one and Tallianine on the other. Each received one intravenous injection daily, and one appeared to convalesce as rapidly as the other. These horses were advertised for sale on a certain day and were shown in harness against my advice. As a result they both had a chill that same evening followed by a severe relapse; each animal then received two injections daily of Nuclein and Tallianine respectively—the Tallianine subject dying on the third day, and the one receiving Nuclein on the fourth.

On the 21st of last June I was called to see a horse at East Hampton, L. I., belonging to Mr. Charles J. Fisk, of the banking firm of Harvey Fisk's Sons, New York City. This horse had been sick over a week with broncho-pneumonia, and was being treated by a local veterinarian, who was using the usual remedies. Upon my arrival I found the animal with a temperature of $106\frac{1}{2}$, pulse 80 and very weak, respirations 60. He was in a single stall, and was so weak that the attendants cautioned me when going in to examine him to be careful as he was likely to fall upon me. I immediately gave him 20 c.c. of Nuclein and normal salt solution (equal parts), with a grain of strychnia every three hours to maintain the action of the heart; this was at 8 o'clock P. M. The next morning at 5 o'clock his temperature was down to 103. I gave him another injection that morning of the same solution that he had received the night before. His temperature remained after that below 103 during his entire convalescence, which was rapid and uneventful.

On December 31st last I was called to the stable of A. C. Vail, of Plainfield, New Jersey, to see a valuable carriage horse he had purchased one month before in New York City. The groom had noticed that he was dull and listless that morning, and I found him with a temperature of 106, and my diagnosis was influenza. In a few days the case developed into double pneumonia, and, as I had not administered Nucelin on my first visit I continued to use the ordinary remedies, all the while keeping a close watch of his condition. After a week his temperature was reduced to $102\frac{1}{2}$, and he appeared to be doing well. The day following, without any apparent cause, his temperature jumped to 106. Large doses of acetanilid, strychnia and alcohol seemed to produce the desired effect and his temperature fell within twenty-four hours to 103 and remained there for two days. Again the attendant notified me by telephone that his temperature was rising, and upon my arrival the

thermometer registered 107. His respirations were very rapid and labored, and I looked upon the case as hopeless; but I immediately gave him an intravenous injection of Nuclein, using one of Parke, Davis & Co.'s 20 c.c. hermetically-sealed tubes containing equal parts of Nuclein and normal salt solution. The next morning I received word that the horse's temperature was down to 102, and upon my arrival in the afternoon I found his temperature 101 $\frac{1}{2}$. The next day it was normal and I did not have occasion to repeat the dose, as his recovery was very rapid from that time.

A FEW AFFECTIONS OF THE TENDONS TREATED BY AN IODINE PREPARATION.

By ALEXANDER GLASS, A. M., V. S., Philadelphia, Pa.

For some time I have been experimenting with Iodine-Petrogen, 10 per cent., mostly on thoroughbred horses, for various affections, and have obtained very gratifying results. In fact, in one or two diseases it has proven almost specific in effect.

The first affection in which I employed the medicament was curb or enlargement of the sheath of the tendo-metatarsi, particularly in young horses; and on quite a large number of these cases I found that if the curbs were recently formed and had fever in them, if treated early, a daily application, well rubbed in and continued for two or three weeks, caused an almost entire absorption and return to normal condition. In older cases the effects, while not so marked in character, were at the same time more than ordinarily pronounced.

In bowed or strained tendons, especially in horses that have been hurt in racing, in every case, if taken early, and not in old cases that were redeveloped and the horse laid up, the results were extremely satisfactory. In ten cases of bowed tendons treated, the majority had hardly a trace of the trouble remaining in any of them.

In this connection too much stress cannot be placed on the fact that the preparation must be rubbed in regularly once or twice daily for two or three weeks, thoroughly massaging until it is entirely absorbed, continuing the rubbing for one-half hour if necessary, as this method of application will greatly enhance in value the remedial activity of the preparation.

There is another disease common in two-year-old colts, namely, osslets, usually developed from premature and severe

training, in which I used the Iodine-Petrogen; and my experience in these cases fully demonstrated that the results were really wonderful, as almost complete absorption occurred if the parts were carefully massaged for half-hour daily with the preparation for fifteen to twenty days.

In conclusion, I cannot too strongly urge the thorough rubbing in of the preparation, as this causes entire and rapid absorption of the medicament, which penetrates to every part of the affected tissue, inducing resolution in a short time.

Of course, there may be many other affections in which the preparation would prove very useful, but I restricted my experiments entirely to conditions of the tendons. In all instances I found that it possessed many advantages over the ordinary tincture of iodine, in so far as it penetrated the integument very readily if accompanied by careful massage.

RECORD IN BOVINE PRECOCITY.

By GEORGE R. YOUNG, D. V. S., Omaha, Neb.

Visiting one of my clients last Sunday afternoon he informed me that he had something he thought would interest me. On going to the stable he showed me a cow and a calf that looked natural enough except that the cow looked unusually small. The calf was born on March 14th, 1907, and the mother on March 2d or 3d, 1906. I questioned him very closely to see if he were possibly mistaken, but he was quite positive as to the time. He had no idea she was going to calve till he found her, and then had to specially exert himself to deliver her normally. A precocious youngster!

A NEGLECTED CASE OF MASTITIS.

By W. C. HANAWALT, M. D. C., Galesburg, Ill.

Mr. C., a dairyman, called me to see a Holstein cow, recently fresh, with an immensely large and swollen udder. It was as big as a bushel basket or larger, and looked as if it might weigh several hundred pounds. The swelling extended forward almost to the front legs, taking the course of the lacteal veins. This forward swelling was soft and fluctuating.

I made an opening in this and a creamy pus escaped to the amount of several pints. Washed it out with antiseptics and gave calcium sulphide internally, with flex foxglove, and she made a complete recovery.

SURGICAL ITEMS.

BY DRs. L. A. AND EDWARD MERRILLAT, CHICAGO, ILL.

THROMBOSIS OF THE ILIAC ARTERIES OF THE HORSE.*

BY PROF. UDRISKI.

Thrombosis of the iliac arteries is undoubtedly a rare, grave disease, and whose diagnosis, especially at the onset, may be overlooked by many practicing veterinarians.

I had the occasion to see, to observe minutely and to diagnose such a case, and herewith report it with all of the details which concern this important subject. The animal in question belonged to Her Royal Highness, the Princess of Roumania, for whose permission to publish the case I am profoundly thankful.

But let us return to the patient constituting the subject of my communication—the American hunter “Weathland,” nine years old, 1.62 metres high, ringbone on the right hind leg and tail amputated. In the month of November I was called to

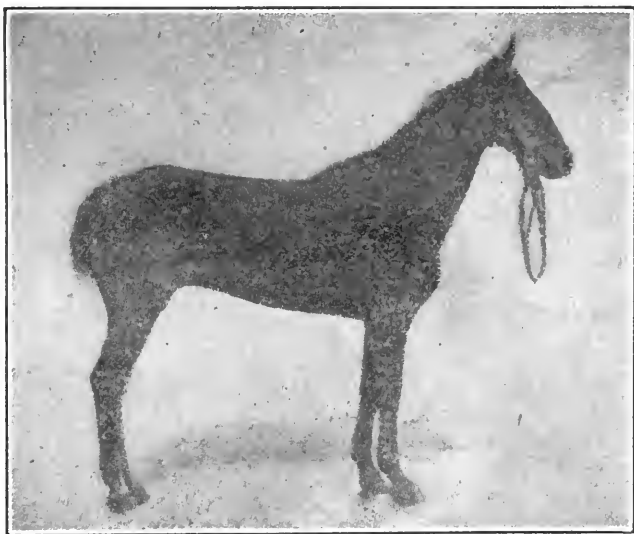


FIG 1. THE HORSE “WEATHLAND” AT REST.

*Translated from *Arhiva Veterinara*, Dec., 1906.

examine him for a pronounced lameness, which I diagnosed as a false luxation of the patella, and which completely disappeared in three days from irritant frictions and rest. In the month of December I was again called to see the same animal, and learned from the anamnesis given by Her Royal Highness, who rode the horse, that he had rendered excellent service at the Royal manœuvres during September and was admired by all the foreign military attaches. From then, although less frequently mounted, it was noticed that he tired easily, and that on the day our observations began, Her Royal Highness found that while he traveled well at first, a trot of several minutes provoked a manifest embarrassment of the posterior limbs that accentuated more and more with exercise.

In proceeding with the examination, I found that the general health was good; temperature, 37.9° C.; pulse, 26 to 30—distinct and full; respiration, 5 to 6. The mucous membranes were slightly icteric. On percussion there was increased dullness in the precordial region, but there were no abnormal sounds on auscultation. On rectal exploration the aortic pulsations were normal, but the tension of the right iliac, by comparison, was found less pronounced than the left. The urine was normal.

On palpation of the collateral metatarsal arteries, there was a parallel diminution in the tension of the right one; the general sensibility was conserved; there were no zones of anæsthesia; the patellar reflexes were lessened; the muscular tension increased; the pupils were slightly dilated; the fæces were hard and dry, and the attitude of the ears was normal; all of which symptoms were observed while the animal was at rest. On the second day the temperature was 38° C., pulse 30, respirations 6, and the other symptoms were the same. On the third day the temperature was 38° C., pulse 35, respirations 6. The pulse was not isochronous with the heart beats. Outward and inward movements could be observed at the entrance of the chest. The animal wobbled behind and sank at the haunches when mounted. *Trotted for four minutes*, the right hind leg became stiff in abduction and the hocks were not flexed; *after five minutes*, the same phenomena began on the left leg and the whole gait became disordered; the horse avoided a straight line, but walked half obliquely to the left; *after seven minutes*, he could scarcely remain standing, the respirations were much accelerated, the nostrils dilated and an accentuated perspiration began to appear anteriorly. *After exactly eight minutes*, the animal laid down, at which moment



FIG. 2. ANIMAL AFTER EIGHT MINUTES' TROTting.

the respirations were 46, the pulse 54, and the temperature 38 C., with an abundant perspiration extending to the level of the external angle of the ilium. The respirations were abdominal, the eyes appeared to protrude from the orbits, the nostrils were dilated, the ears thrown back, the back arched, and the abdomen tucked. Violent contractions of the sterno-abdominal muscles and the muscles of the extremities were also observed, together with elimination of intestinal gas per anum. The mouth was frequently opened and the tongue continually protracted and retracted; the mucous membranes were cyanotic

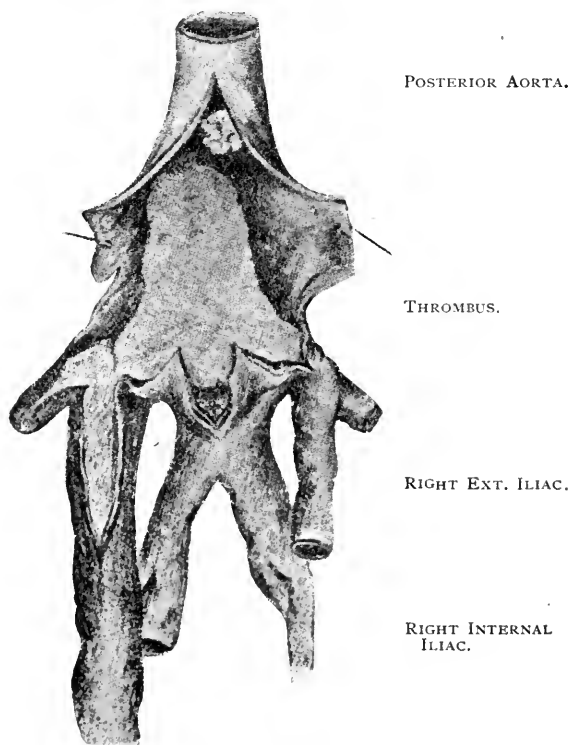


FIG. 3. ANIMAL BEGINNING TO RECOVER AFTER 20 MINUTES.

and the perspiration flowed profusely. The muscular contractions were so powerful as to threaten fracture. During these intervals the animal rose, stood rigid for a short time, and then fell to his knees, leaving the hind quarters elevated. These different positions were of short duration and after a time, the animal succeeded in permanently maintaining the standing position. *After twenty minutes*, walking became possible and in one hour everything was normal.

These symptoms could be provoked five to six times a day if the animal was submitted to a trotting exercise of several minutes, and I could affirm that with almost mathematical precision, after eight minutes of exercise the animal would be recumbent. I made this demonstration before a number of persons, who were astonished at the precision of the succession of the symptoms above described.

In the face of the symptoms, it was evident that there existed an embarrassment of the arterial circulation of the poste-



POSTERIOR AORTA.

THROMBUS.

RIGHT EXT. ILIAC.

RIGHT INTERNAL
ILIAC.

FIG. 4.

rior extremities, which I then diagnosed as thrombosis of the iliacs. I prescribed rest and the administration of ten grams of potassium iodide per day for fifteen days without results. By communicating the diagnosis and, above all, the unfavorable prognosis to Her Royal Highness, her consent to sacrifice the animal was obtained.

At the autopsy, the most important lesions found were: Cardiac hypertrophy, slight pulmonary emphysema, and exceptionally beautiful thrombotic lesion at the termination of the abdominal aorta and the iliac arteries, especially of the right one. (Fig. 4.)

Professor Hendrickx, in the ^{*} ^{*} ^{*} *Annales de Médecine Vétérinaire*, published the following very interesting observation on the same subject: It occurred in an imported American gelding, seven years old and 1.6 metres high. During more than one year he worked to a wagon to the entire satisfaction of the owner. At a certain time, he began to manifest some defect in the gait of the posterior extremities, the right leg suffering somewhat more than the left. A *confrère*, in the absence of all external lesions, diagnosed the condition as rheumatism, for which he prescribed an internal and an external treatment, with absolutely no results. On the contrary, the embarrassment accentuated more and more, and in strict obedience to the amount and the rapidity of the exercise.

In this condition the animal was presented to Professor Hendrickx. From the attitude presented in the stable, nothing would permit one to suppose that the animal was affected with such a functional disorder. The support was normal and one leg was not lifted higher than the other. Examination of the posterior legs was absolutely negative, and inspection and palpation disclosed nothing abnormal. Taken from the stable and led about, the animal was spry, reared up, and showed no defect whatever nor the least hesitation. But if trotted for ten minutes, he would "break down" completely, being unable to remain upright. The idea of thrombosis immediately suggesting itself, the Professor, desiring to provide the students with a case that was assuredly interesting, easily induced the owner to send the horse to the hospital of the Veterinary School. In proceeding to examine the horse on the next day, the absence of any analgesic zone in any part of the hind legs was first verified. It was found that pricking the animal at various parts of the legs provoked perfectly normal reaction on the part of

the animal. Submitted to walking exercise everything remained normal for seven minutes, but after this moment a manifest embarrassment declared itself in the posterior extremities; lameness appeared in the right side, presenting no special characteristics at first, but soon the animal became unable to flex the hocks, the legs became rigid and the toes dragged on the ground. As soon as the horse was stopped, trembling of the muscles of the buttocks was observed. Trotted, the same manifestation appeared on the left side and soon the embarrassment became so pronounced that the animal was unable to advance or remain standing, and fell down in spite of every effort to prevent. The exterior aspect of the animal was also much modified. The back was arched, the abdomen tucked, the respiration accelerated, the nostrils dilated, the eyes staring, and the tension of the facial muscles indicated extreme suffering. Soon profuse perspiration appeared anteriorly and extended backwards only to the level of the flank. This peculiarity was particularly more evident, because, it being winter, there was no evaporation of the perspired water in the front part of the body and the hind parts remained perfectly dry. The same applies to all of the regions anteriorly, which are manifestly warm, while the posterior regions denote that there is more of a diminution of the surface temperature. The animal remained down for ten minutes and then rose spontaneously, still presenting a slight rigidity of the posterior extremities. The derangement persisted during twenty to thirty minutes, but thereafter not a single anomaly remains.

He repeated this experience more than a hundred times, each time bringing out these same symptomatic manifestations with almost mathematical exactness, and it was decided that an obstacle to the circulation of the posterior extremities should exist. The quantity of blood that could pass through the thrombotic vessels was sufficient, as long as the muscles were at rest, but as soon as the functional activity of these organs created a demand for considerable quantities of blood, these ischemic manifestations supervened.

It was interesting to search for the location of the obstacle. As the symptoms were bilateral, it was logical to search at a point common to both extremities. It was then thought probable that the seat would be found at the terminal end of the posterior aorta, and could be determined by a rectal exploration. Unfortunately this exploration did not give the precise indications; palpation of the aorta and the iliacs did not dis-

close a single anomaly of texture; the vessels appeared to present normal tension, and the pulsations were isochronous with the heart beats.

* * *

Another case is related by H. S. Elphick, of Newcastle-on-Tyne, and published in the *Veterinary Journal*, May, 1906. Although incompletely described, in view of their rarity I will nevertheless recite the case almost *verbatim*.

The subject is an old, black pony, the property of an inhabitant of Newcastle. It had always enjoyed good general health and had never been sick nor lame. On the 24th of November, 1905, the writer was summoned to call as soon as possible to visit a horse that was very lame and asphyxiating. On arrival he learned that the pony having been taken out for exercise, slipped on a crossing, with the hind feet, without falling entirely down, and that the groom had cured it by the application of warm clothing. The pony was brought out, but the examination failed to disclose anything abnormal. In the writer's words, "I recommended moderate exercise in the alley or stable for the following morning, but when this was attempted, the groom observed that the pony was lame and returned it to the stable and called me again. In this second examination I still found nothing and recommended rest. I visited it again on the 2d and on the 5th of December, finding the same condition and recommended another week of rest. I revisited it in company with my father on the 12th of December, and, bringing out the symptoms fully, the pony was returned to the stable with the greatest difficulty; the lameness was so acute. On return to the stable it manifested considerable pain in the legs, by getting down and up continually, as if affected with cramps. Suspecting thrombus, I made a rectal examination and found pulsations in the left iliac, while the right one was pulseless and hard. I consulted the proprietor and recommended that the animal be killed; but, as he was much attached to the pony, he asked if I could not try some other treatment. I prescribed potassium iodide and biniodide of mercury(?) and a long rest of seven to eight weeks.

"On visiting him again during December, without moving him from his box, he was in good spirits, rearing and dancing about in the stall. The treatment was continued until January 24th, 1906, at which time he was trotted on the road, but soon lamed so badly that he was required to be almost dragged to the stable. The pain was so severe that I found it necessary

to give him calmative remedies. The owner finally consented to the killing of the patient. On post-mortem examination all of the thoracic and abdominal organs were found sound. I found an extended thrombosis of the right internal and external iliac arteries and an incomplete obstruction of the left arteries. The accompanying photograph, taken after the dissection, shows the condition of affairs. Unfortunately the dissection was made in such a manner that the right side might have been mistaken for the left. I regret not having made a rectal exploration before shooting the patient, as I am certain a thrombus would also have been found on the left side. I am also more convinced of this because the animal suffered as much and manifested as much pain on one side as the other. I never observed any coldness of the extremities, nor any local nor profuse perspirations. I might mention that the subject was very fat, kept in good condition, and never showed any exaggerated movements except that of dragging the legs.

"The question now arises as to whether the slipping on the street crossing was the original cause of the thrombus or only a coincident. The pony had never lamed before."



FIG. 5. PHOTOGRAPH OF DISSECTED SPECIMEN, TAKEN FROM H. S. ELPHICK'S CASE.

* * *

Prof. Poenaru (Bucarest) published in *Le Progrès Vétérinaire*, January, 1898, under the title "Thrombosis of the External and Internal Iliac Arteries," a clinical lesson that is equally incomplete. The subject was a Hungarian draught horse, nine years old. "We could obtain no knowledge of his antecedents," says Prof. Poenaru. "The one thing that was clearly mentioned is that the horse ate well and was in good general health, but if pulled after a course or two, he became weak in the hind quarters, staggered, and sometimes broke down entirely. These alarming symptoms would disappear if the animal rested a few minutes. On the 20th of April, in an effort to verify these statements by trotting the horse for one hour, the hind quarters became paralyzed; the

posterior limbs were so wabbly that they fell across each other at the fetlocks. An examination while in this condition showed that the pulse at the facial artery was full, the mucous membranes injected and a part of the body covered with perspiration. On rectal exploration the aortic and iliac pulsations were distinct, and pulsations taken at the femorals and metatarsal arteries were still perceptible, thus leaving the symptoms of thrombosis of the iliacs incomplete, but the manner in which the paralysis appeared and its disappearance after rest, suggests such a lesion of one or more of the collateral or terminal branches, but with only an incomplete obturation." Prof. Poenaru says nothing about the termination of this case. He simply mentions that it was treated with potassium iodide, but does not indicate the dosage, the duration nor the results obtained.

(To be concluded in May number, with Annotations.)

A RABID HORSE.—A horse owned by Thomas Kearney, Meriden, Conn., developed rabies on the morning of Feb. 28 as a result of having been bitten by a rabid dog three weeks previously, and, breaking out of the stable, it held the south end of the town in a state of terror until, an hour after its escape, it was lassoed by Veterinarian Beckley and shot. The account states that Dr. Beckley made an examination of the brain, which confirmed the diagnosis.

THE MINNESOTA PRACTICE LAW.—The Minnesota veterinarians are asking for a revision of the veterinary practice act, which ought to make it as good, if not the best in the country. The principal changes asked for are as to giving the Examining Board discretion concerning colleges, by inserting the word "reputable" in the phrase "regularly organized and reputable colleges giving a course of not less than three years of six months each." The proviso which allows non-graduates from other states to come before the Minnesota Board is being cancelled. Provision is made for annual renewal of license, with a fee of \$1, the Board to have the power to revoke or to refuse renewal for cause. The date of meetings is being changed to avoid conflict with the State Association. No definite provision is being made for prosecuting illegal practitioners. The President and Secretary are given power to administer oaths and take evidence and the Board term is being changed from two years, all memberships expiring together, to a five-year term, one membership expiring each year.

ABSTRACTS FROM EXCHANGES.

ENGLISH REVIEW.

By Prof. A. LIAUTARD, M. D., V. M.

BISMUTH IN GASTRIC TYMPANY [*Paracelsus*].—A male fox terrier has valvular disease of the heart and of course ascites. He is also a voracious eater, and, as his diet is carelessly given to him, he is subject to digestive trouble. One day he is taken with a very severe attack of acute gastritis, which is relieved with small doses of sulphocarbonate of sodæ. Careful diet is severely recommended. After two days he is allowed a little more food, but he soon again gets sick, and this time his trouble is accompanied with great tympanites of the stomach. A mild laxative and mixture of caryophylli and tincture of belladonna and small doses of brandy bring him back to his normal condition in two or three hours. This did not last long, as on the next day, after a meal of solid food, he is again taken with the same gastric gaseous difficulty. It is then that the author decided to resort to some antiseptics mixed with the food. Subnitrate of bismuth in twenty-grain doses is given mixed with the food and continued every four hours for three days. The recovery was rapid and lasting, the dog had no more trouble until his death, which occurred some time after. Being overfed once too often, he had an attack, vomited and during the efforts of retching he suddenly fell down forwards and was picked up dead. At the post-mortem the heart was found diseased, the stomach dilated, with the walls thinner than usual; but with these exceptions all the other organs were found normal.—(*Veterinary Record*).

MOTOR ACCIDENTS IN LONDON.—The Home Secretary has forwarded to a member of Parliament the following return of motor accidents in the Metropolitan Police District during July and August, 1906: Return of the number of accidents to persons or property known to police to have been caused by (1) motor cars (including motor cycles), (2) motor omnibuses, (3) mechanically propelled tramcars, showing in how many instances personal injuries have resulted and in how many cases such injuries have proved fatal, within the Metropolitan Police District, during the months of July and August, 1906:

	July.	August.
Accidents caused by motor cars (including motor cycles)	539	328
Caused personal injury	178	134
Proved fatal	6	6
Accidents caused by motor omnibuses	381	436
Caused personal injury	74	75
Proved fatal	1	5
Accidents caused by mechanically propelled tramcars. .	286	317
Caused personal injury	105	121
Proved fatal	1	2

—(*Veterinary Record.*)

BILATERAL GRAVITATION ABSCESES [*M. R. C. V. S.*].—A fox terrier got in a fight with another dog and at first did not seem to be much hurt. He apparently had only a small wound on the back, which was covered with a little dry blood. Nothing was done for the dog, but a few days later he presented on each side of the thorax a little swelling, which had a tendency to increase. The author was called. On each side of the thorax, a little behind the forelegs, there was a round diffuse swelling, uniformly firm in consistency. At the wound of the back, a few drops of unhealthy looking pus could be squeezed out from a little fistulous tract, allowing the introduction of a small probe. The swellings were not painful and the general condition was good. Warm moist flannel applications were prescribed with hot fomentations, repeated several times a day. On the fourth day fluctuation was readily perceptible in both swellings. A free incision in each allowed the escape of a large amount of thick, dirty, semi-sanguineous pus. Ordinary surgical treatment brought about rapid complete recovery.—(*Veterinary Record.*)

ECHINOCOCCUS VETERINORUM CYSTS IN THE HORSE [*Henry B. Eve, M. R. C. V. S.*].—An aged gelding had influenza and after recovery was turned out in a marshy land to recuperate. He did not improve, was treated for chronic indigestion, but grew worse and finally was shown to the author, who observed the following symptoms: General dullness, loss of appetite, trembling of the muscles of the neck and left shoulder, slight swelling over the ribs on the left side, œdema of the four extremities. When standing still there was a venous pulse, which was more marked when the animal moved. Pulse weak, heart fluttering, no whistling sound at auscultation. Skin dry, hide-bound, temperature normal, great thirst and marked emaciation. There was a cough like that of a broken-winded horse. The urine was scanty, albuminous, and at times suppressed, when there were colics. Bowels were either constipated or very

loose. A diagnosis was made of pericarditis and chronic nephritis, probably tuberculous, with pulmonary emphysema as a complication. Prognosis unfavorable. After tuberculin test, which was negative, treatment was started of nutritious diet, milk, eggs, port wine, beef tea, cod liver oil, etc., but all without results. The animal died. At the post-mortem were found: lungs and liver studded all over with numerous hydatid cysts of the *Echinococcus veterinorum*. There was marked pulmonary emphysema of the lungs. The liver was considerably enlarged, the heart somewhat hypertrophied, and the kidneys the seat of chronic nephritis. There was also a large accumulation of fluid in the abdominal cavity.—(*Veterinary Record*.)

A FOREIGN BODY IN THE PHARYNX [*Faracelsus*].—Under all circumstances it is always difficult to examine a cat and especially to look at its throat. And when it is a question to handle a strong well-developed "entire" male it becomes a very hard job. In this case the author was fortunate enough to obtain a glance at the presence of a little something that looked like a bone, by introducing the case of a thermometer in the mouth of his patient and depressing the tongue, but when it came to the question of removing it, the chloroform bag had to be resorted to and finally the cause of the trouble was with much difficulty removed. It proved to be a rather large furculum or "wish bone" of either a chicken or some other bird. The bone had been swallowed with the hypocleidium first, but the two branches of the bone had been able to pass the pharynx and was lying across beyond the glottis. Once removed, the recovery was almost immediate and without eventful conditions.—(*Veterinary Record*.)

INVAGINATION OF THE CAPUT CÆCUM COLI IN A PONY [*Clement Elphick, M. R. C. V. S.*].—The subject has had colics, which have been temporarily relieved, and at last is getting alarmingly ill; and the author is called. The following symptoms are observed: Pulse quick and wiry, respirations increased, temperature normal, mucous membranes deeply injected, rectal examination difficult, as the pony makes strong expulsive efforts, bowels are empty and tympanitic, bladder distended, there are sudden attacks of pain, when the horse will drop and then strain violently. Then there are spells of quietness, when the animal seems free from pain and looks for food. Stoppage of the bowels is diagnosed, and treatment prescribed accordingly. After forty-eight hours, report was sent that he had a good passage of his bowels, and he seemed to be well. Careful diet was

recommended and the case discharged. The next day another call was received, but the animal died before the author arrived. At the post-mortem, he found that the "apex of the cæcum was invaginated into the body of the cæcum, the portion invaginated being strangulated and the bloodvessels very much enlarged and hardened. The invaginated portion measured nine inches and a half."—(*Veterinary Journal*.)

TWO CASES OF FIBROUS ANCHYLOSIS OF THE KNEE JOINT [*Captain H. A. Sullivan, Poona, India*].—An English thoroughbred mare got severely injured in both knees, and after nine months these were so stiff that she could hardly bend them out of a straight line. At first it was thought to use her for breeding purposes only, but finally treatment seemed to offer some chances of success and she was operated. "To this end," says the writer, "I put her under chloroform, and by means of traction, obtained by passing a rope from the fetlock through a collar on the neck, I broke down the adhesions thoroughly in one knee, leaving the other for another time." The next day the knee was enormously enlarged and painful. It was well fomented and massaged twice a day with belladonna and glycerine, being careful to flex the knee to a certain extent each day. In the course of three weeks the joint could be flexed to an angle of 90°. She was then put down again and the other leg treated in a similar way. In two months and a half after she was put to training." The author has operated in the same way and with the same results upon another horse, but then it was only on one leg, the near knee, and the ankylosis existed for only three weeks.—(*Veterinary Journal*.)

TWO CASES OF FOREIGN BODIES IN CATTLE [*James G. Tait, M. R. C. V. S.*].—These two cases enrich the already large collection of the variety of foreign bodies that can be swallowed or found in cattle. The first was observed in a cow. At a first visit the author advised a drench of oil, but at a second call, the oil having given no relief and finding a peculiar obstruction in the œsophagus, he secured the animal and operated, succeeding in removing one iron heel of a laborer's large, heavy boot, with five nails jagged and projecting, with one penetrating the œsophagus. The animal made a good recovery. The second case was found in the stomach of a cow by rumenotomy. It was the hasp or catch of a door. Located in the rumen, it had given rise to the usual symptoms of indigestion; the presence of a foreign body was suspected; it proved correct by the operation.—(*Veterinary Journal*.)

OBSTRUCTION OF THE BOWELS AND DEATH DUE TO A SPONGE [*Henry B. Eve, M. R. C. V. S.*].—This is the history of an old mare, known as a gross feeder, which was taken one day with colic, requiring a very severe treatment. Physostigmine, pilocarpine, mustard applications, rectal injections of all kinds, eserine and strychnine were resorted to and finally relief was obtained, so that after a few days of rest and good hygienic treatment, the animal was returned to work. But after a week, the symptoms returned with possibly less severity. At this time, however, the treatment was not beneficial, and as the mare was very emaciated, the owner was advised to have her killed. At the post-mortem the stomach was found healthy, the intestines were congested, and in the ileum at its terminal end there was a small piece of sponge firmly wedged in and which had evidently been swallowed some time before.—(*Veterinary Journal.*)

NOTES ON THE PRESENCE OF SPIROCHÆTES IN AN INFECTIVE SARCOMA OF THE VAGINA OF A BITCH [*A. E. Mettam, Principal Royal Veterinary College of Ireland, Dublin*].—A new growth having been removed from the vagina of a bitch; slides were made and examined. It was found the usual type of such growths, a round-celled sarcoma. Smears made and fixed and stained showed on examination numerous spirochætes. More particulars will follow.—(*Veterinary Journal.*)

INFECTED OPEN TENDON SHEATHS [*Prof. W. L. Williams, of the New York State Veterinary College*].—The record of six cases of diseased sheaths of tendons, in which the radical treatment of free incision and careful antiseptics was resorted to. The first, a case of thoroughpin of several months' standing, became infected, but nevertheless recovered in due time. The second case was one of injury of the tendon sheath of the fetlock, in which the recovery was very rapid. In the third case it was an injury of the fetlock of one hind leg. Here, again, the recovery was rapid. The fourth had an extensive distension of the tarsal sheath. Thermocauterization, even deep, failed. Infection took place, and free incision with antiseptic dressings were followed by recovery. In the fifth case, one of fetlock injury, free incision and tincture of iodine dressing relieved him in a short time. The last case, also one of fetlock injury, was more tedious, but finally yielded to similar treatment. The author depends on the value of the radical operation, on the thorough disinfection of the entire traumatic surface, insists on the value of avoiding compression and friction between the inflamed sur-

faces, and calls attention to the fact that he did not resort to any recently-discovered disinfectants, but depended on iodine and sublimate.—(*Veterinary Journal.*)

A CASE OF FILARIA IN AN ENGLISH HORSE [*C. W. Townsend, M. R. C. V. S.*].—Eight-year-old Hackney which discharges a good deal from one eye. Cornea is clear, eye a little sensitive to light; a small round worm is seen swimming in the aqueous humor. In a month the eye is inflamed, cornea becoming opaque; aqueous humor assumes milky aspect; photophobia is well marked. After some two months this condition improved and gradually subsided; sight was lost; worm still apparent, but dead; opacity of the cornea passing off.—(*Veterinary Journal.*)

TETANUS IN A DOG [*A. C. Duncan, M. R. C. V. S.*].—A hound hunted on a Saturday; following Tuesday it seems strange, walks stiff, tail straight out, unable to eat. He is otherwise healthy, and tries to eat. Only a few scratches are found about his legs. Treatment: calomel, bromide of potassium and perfect quietness. He grew worse and was killed. Post-mortem negative.—(*Veterinary Journal.*)

AN INTERESTING SUCCESSION OF RECOVERIES FROM MILK FEVER IN A COW [*R. Waghorne, V. S.*].—The record of a pure-bred Jersey, aged 10 years, which had milk fever in 1904, 1905 and 1906. In 1904 it was her fifth calf, in 1905 she had twins, at her last attack she had a bull calf. Her recovery was perfect in every instance, and now she is giving 14 quarts of milk. She used to give 19½. The first time she was treated with iodide of potassium and aloes. The third time with insufflation of air in the udder.—(*Veterinary Journal.*)

FRENCH REVIEW.

By PROF. A. LIAUTARD, M. D., V. M.

AUTOMUTILATION IN A DOG SUFFERING WITH SUBACUTE MENINGO-ENCEPHALITIS [*L. Marchand, J. Basset and E. Pecard*].—This is an exceptional case, as, with the exception of rabies, it has not been observed in any other affection, in animals at least. In three weeks this dog has bitten off more than two-thirds of his left hind leg. It was a fox terrier, aged one year, which two weeks previous had shown a great liking for

licking the lower part of his leg where there was a little wound. He would also bite and tear all kind of dressings or bandages that were put on it; and now he does not rest his paw on the ground, the wound has considerably enlarged and at the bottom the phalangeal bones are seen unprotected. A dressing is applied, but the next morning it is found all torn and the lower extremity of the paw has disappeared, the leg is amputated as far as the metatarsals. The dog is quiet, continues to lick his wound and his appetite is still good. All of a sudden, he is taken with a rage, smells his wound, and as suggested by an irresistible feeling he takes hold of the stump of his leg and bites it with rage, growling, crushing, tearing and swallowing half of his metatarsal. He becomes quiet then for a while, but soon another attack returns and in a few moments his hock and the lower third of the leg are devoured. These manifestations were followed by two days of calm, with good appetite, normal mastication and deglutition, normal sight, normal sensibility. After that time, another attack took place during the night, and the leg destroyed as far up as the patella, leaving a large bleeding, irregular and anfractuous sore which the poor brute keeps licking. Notwithstanding all cares to this wound, the general condition of the animal could not stand the strain long, his condition broke down and death occurred in three weeks from the first manifestations. Post-mortem: Nothing peculiar at the opening of the cranium, only great quantity of cephalorachidian fluid. Lateral ventricles much dilated. Brain thinned, with circumvolutions less marked. Meninges thickened and infiltrated. The histological examination reveals a subacute meningo-cephalitis, diffuse but particularly severe on a level with the cerebral fissures. The interpretation of these manifestations is given as follows by the authors: A meningo-encephalitis developed in the dog, when at the extremity of the leg came a little wound giving rise to itching. Out of his mind, the dog first licked, then bit the region, hoping to get relief but going beyond, because individuals suffering with those affections have a loss of sensibility to pain; they may feel the prick of a pin, but do not have pain. With this dog, the crisis of autophagism was due both to the disagreeable sensation from the wound and the diminution of the intelligence and hypoalgnesia.—(*Recueil de Médecine Vétérinaire.*)

ENORMOUS HÆMATOMA NEAR THE GULF OF THE RIGHT JUGULAR VEIN IN A COW—LIGATURE OF THE JUGULAR [*P. Bitard*].—An old cow, rather poor in condition, receives a blow

from the horn of another, and in a short time presents at the entrance of the chest, on the right side, an enormous swelling, warm, hard, and which is punctured in two or three places with a fleam by the owner. Quite an abundant escape of blood took place then, but the enlargement continued increasing and now it forms a large tumor, rounded, situated at the gulf of the jugular, more on the right side. It interferes much with locomotion. The history of the case and the presence of a marked depression, in which the index finger can readily enter, tell the nature of the injury and of the trouble; it is an hæmatoma, due to an injury of the jugular. The author is not partisan to waiting for natural progress and possible absorption; he prefers immediate interference. He proceeds in the free opening of the tumor, so as to empty the sac of the clots, and succeeds well until a certain time when, of a sudden, the blood started flowing freely from the injured bloodvessel. Immediately the jugular was cut down upon above the seat of the first injury, it is exposed, and a ligature applied upon it, arresting the flow, which threatened to end fatally. The cavity of the hæmatoma was then carefully cleaned, all the clots removed, and a compressive dressing made of perchloride of iron, oxygenated water and hydrophile wadding was applied, leaving but a very slight hæmorrhage from the small vessels at the lower part of the cavity of the hæmatoma. The dressing was changed every two or three days and kept as antiseptic as possible, and little by little the cavity granulated and filled with cicatricial tissue with a gradual undisturbed recovery.—(*Progrès Vétérinaire.*)

NEW DIAGNOSTIC SYMPTOMS OF GASTRO-INTESTINAL LACERATIONS IN GENERAL AND OF THE GASTRIC AND RECTAL IN PARTICULAR [*M. Pecus*].—I. *Lacerations of the Stomach*.—For these, there is the vomiting and the efforts in connection with it, with also the odor *sui generis* at the nostrils. But this is sometimes missing, and there is a symptom which the author says is always present, namely, a peculiar special noise, a kind of howling similar to the one given by a stallion smelling a mare. An animal has colic; while a drench is given to him, he gives that peculiar cry. At the post-mortem, the stomach is found lacerated. Another horse is also taken with abdominal pains, very severe colic, and while a drench of opium is given he kicks several times with his fore legs and sends off the peculiar cry of the author. On rectal examination the hand has the peculiar soft sensation of the rubbing of the coats of the peritoneum against some strange body, and which indicate the

existence of a rupture in the digestive canal and the presence of foreign substances in the peritoneal cavity. This horse died and a rupture of the stomach found at the autopsy. 2. *Laceration of the rectum*.—Of course it can be easily diagnosed by manual examination, but through some circumstances it may not be detected. One symptom will rarely be wrong: it is the temptation of the suffering animal to push with his rump against the wall or in a corner of his box when he is not in too great pain and where he can rub himself as if suffering with vermin.—(*Journal of Zoötechny*.)

GERMAN REVIEW.

- By J. P. O'LEARY, M. D. V., Bureau of Animal Industry, Buffalo, N. Y.

NEW MEDICINAL REMEDIES [*Dr. Zimmerman, Budapest*].—By the name *Vasogen*, we understand that it is vaseline impregnated with oxygen, forming a hydro-carbon, which is its most important and effective ingredient. In the addition of oxygen this preparation acquires double properties; its absorptive action is increased and it can be more easily emulsified with water. At the ambulatory clinic of the Veterinary High School, Budapest, tests were made to ascertain the therapeutic value of Iodo-Iodoform and Creolinvasogen. Iodovasogen 6 per cent. was smeared over neglected torpid proliferating wounds. After a few days the secretions diminished, pus disappeared and healthy granulations formed, followed by a complete cure. In contusions and sprains, massage with Iodovasogen gave gratifying results. This preparation leaves no scar upon the skin at the seat of application. It is also of benefit in the treatment of goitre in dogs. In the latter case, after clipping the hair the ointment is to be well rubbed in over the affected glands, for at least 5 minutes, once a day, together with the internal administration of 5 drops of the same preparation in the beginning, and later it may be increased from 10-15 drops for a dose on sugar, afterwards it may be given in milk, coffee; this is the most palatable vehicle and the animal takes it without forcible means. No ill effect was observed, as vomiting and diarrhoea; the enlarged glands diminished to normal size in from 10-14 days after this method of treatment. Iodoformvasogen contains 3 per cent. iodoform and possesses the advantage over other similar preparations—for example, iodoform glycerine—that in this

case the iodoform remains thoroughly suspended. At the same clinics, this preparation was used almost entirely in the treatment of abscesses, resulting from strangles infection and suppurating fistulous wounds, with good results; pus formation was checked and the fistulous tracts healed with beautiful granulations. In phlegmon, on the contrary, this remedy has little value.—(*Ber. Tier. Wochen.*)

HÆMORRHAGE FROM THE UTERUS [*District Vet. Sigl.*].—A 16-year-old mare suffered from a more or less severe hæmorrhage for four months. On examination the blood seemed to flow in a thin stream from the inferior wall of the vagina, but on closer examination it was found that the blood issued in quite a fine stream from the uterus. The os uteri was dilated to the extent to admit the passage of three fingers. No lesions of the genital tract were perceptible. Treatment:—Rest; injections of a 1 per cent. lukewarm solution of alum once a day. After 10 days there was no improvement. He next substituted for the alum solution a 2 per cent. solution of liquor ferri sesquichloride, but with no better success, finally prescribing extractum hydrastis fluidum, 20 grams, twice daily. After a few days the hæmorrhage ceased.—(*Wochenschrift für Tierheilk. und Viehzucht.*)

CONSEQUENTIAL SYMPTOMS DUE TO THE RETENTION OF THE PLACENTA IN THE MARE [*Ober-tierarzt Dr. Bernhardt*].—B. describes two cases showing paralysis of the hind quarters as a result of the retention of the placenta. In one case the mare had aborted; the secundines had not been expelled. Shortly afterwards the mare showed symptoms of weakness in the hind quarters. In spite of the manual removal of the afterbirth and flushing out the tract with disinfectants, the weakness increased until complete paralysis of the hind quarters had set in. Death followed in about 24 hours after the act of parturition. In the other case the mare had foaled at the end of the normal period of gestation and seemed to have expelled the afterbirth *in toto*. Two days later she went stiff in both hind legs. Temperature 39.2 C., pulse 60, respiration 18. The stiffness increased. A quantity of exudate was discharged from the vagina. The treatment consisted for the most part in flushing out the genital tract with disinfectants. After five days the mare had made a complete recovery. B. refers to the fact that in the text-books of Franck and Harns no mention is made of the above described series of conditions.—(*Zeitschrift für Gestüttekunde, Heft 5.*)

BRONCHITIS IN THE HORSE WITH FATAL TERMINATION [*Veterinarian* Jak. Wohlmatt, Vienna].—W. describes the progress of this malady in three horses which were brought to the Vienna school for treatment. On examination the patients were found suffering from bronchitis, and notwithstanding the most careful treatment death ensued. The history of those three cases pointed to the fact that the animals showed inappetence for some time previous. The examination also revealed the presence of an intense hyperthermia, which in spite of the continuous application of ice poultices could not be lowered. Extensive dry râles were audible over both lungs, which did not give way to the clear and loud percussion sound, indicating convalescence. There was an increased purulent nasal discharge and finally dyspnoea which almost bordered upon suffocation. At the autopsy he found in the first case only a mucopurulent bronchitis; in the second case, lobular pneumonic foci in both lungs about the size of a hazel nut, in the stage of gray hepatization; in the third case, a chronic indurating pneumonia, double fibrinous pleuritis and numerous large caverns filled with purulent contents, besides the appearances of parenchymatous degeneration in all the large visceral organs.—(*Tierärztliche Centralblatt*, 1904, No. 4.)

“REVIEW” READERS are urged to send in for publication personal items concerning themselves or their veterinary friends which are of interest to the profession. There is no reason why the “news” of the profession should not be disseminated, so that the members may be kept *au courant* with the doings of their brethren.

THE DANGERS OF CAT DIPHTHERIA.—As illustrative of the grave danger of cats suffering from diphtheria transmitting the disease to other felines and to human beings who fondle the sick pet, the story was published in the New York papers on March 1 of a stray cat, befriended by little Annie, daughter of H. A. Yale, Patchogue, L. I., that returned evil for good by causing the death of its benefactress. The child, who frequently caressed the cat, soon contracted diphtheria, and the germ has been traced to the cat. The account states that this is the second occasion on which a cat has spread death in Patchogue. A Mrs. Gordon and her four children, some four years ago, died under similar circumstances. Then it was definitely known that the cat was responsible; and it was examined after the deaths and found to be suffering from black diphtheria.

ARMY VETERINARY DEPARTMENT.

PATENT STOCK FOODS.

Fort Snelling, Minn., Feb. 15, 1907.—During the month of December the Iowa State Legislature began to look into the affairs of patent stock-food manufacturers, exposing the frauds which had been perpetrated on the public for some time. The results of this investigation at present, I know not, but on the same lines the Minnesota people are hot after concerns in this state; good results will follow here, as Minnesota knows just how to do such things.

During May, last year, the Quartermaster's Department of the Army was induced to try and make a test of a certain stock food (The American); sacks containing 100 pounds were sent to different Posts for use among the horses.

I was fortunate enough to be allowed to conduct one of these tests on a number of our horses, not in very good condition of flesh at the time. The material was fed in regular grain ration twice daily, as directed, to 44 animals, for a period of one month, and at the end of this time a report was ordered to be made. This was our opportunity to reveal the utter uselessness of a food of this character. Fed in the quantities directed, it had absolutely no virtue. The material was designed to take the place of straight grain ration, supplanting same, being in concentrated form, thereby saving money to the Government in oats and corn. My report went in on June 18th, 1906, and since then have heard nothing further. Only trust that other veterinarians found the same results.

L. E. WILLYOUNG.

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RABIES IN MINNESOTA.

Fort Snelling, Minn., Feb. 15.—For the past few weeks rabies has been apparent in and around the Twin Cities. Fort Snelling is situated about midway between the cities, and with the usual admiration and affection that the ordinary soldier has for a dog, we were some of the first to be visited by affected animals. To the present date three enlisted men have been sent to the Pasteur Institute at Chicago for treatment, having been bitten by (positively) rabid dogs. Loose unmuzzled and stray dogs are rapidly being decimated in both St. Paul and Minneapolis at the present time, as press reports show, and hopes are

entertained of checking the further spread of this condition in the near future.

L. E. WILLYOUNG.

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GAINS FOR THE VETERINARIAN.

The 59th Congress has made one concession to the veterinarians of the Army, as follows: "Army Appropriations Bills Passed—For additional ten per centum increase in pay of commissioned officers serving beyond the limits of the States." The word *commissioned* (being in italics) is stricken out. The Army Veterinarian is an assimilated officer, hence they will hereafter receive foreign service pay, an increase of ten per cent.

In further connection the value of veterinary literature also seems to be recognized by our Government, as will be noted by the House resolution ordering a 250,000 edition of "The Diseases of the Horse." It is questionable if all recipients of this publication will fully appreciate its value.

Safe to assume the profession during 1906 and so far during 1907 have not retrograded in public view. L. E. WILLYOUNG.

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ARMY PERSONALS.

DR. DANIEL LE MAY, Veterinarian Artillery Corps, has been transferred from Fort Ethan Allen, Vt., to Vancouver Barracks, Washington.

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MALLEIN TO BE USED AS A PREVENTIVE.

The following order of the Secretary of War has been issued:

"CIRCULAR NO. 9.—*War Department, Washington, Feb. 12, 1907.*—The mallein treatment, as a preventive against generalized incipient glanders, will be administered quarterly in the United States, and oftener in tropical countries, to all horses and mules belonging to the Army. Commanding officers are authorized, in their discretion, to extend or to reduce the interval between each treatment as the condition of the animals may indicate. [Signed] J. Franklin Bell, Major General, Chief of Staff."

THE recent serious floods in the Platte River at Columbus, Nebraska, destroyed all the live stock in the Union Stock Yards on Feb. 13. Dan McCrone, a veterinary surgeon, his wife, daughter and a Miss Ball were also drowned, their bodies being recovered the next day.

CORRESPONDENCE.

LEGISLATIVE PROGRESS IN MONTANA.

HELENA, MONT., March 13, 1907.

Editors American Veterinary Review:

DEAR SIR:—I am mailing you under separate cover copies of H. B. 148, 182, 200 and 324, passed by our recent Legislature and approved by the Governor. House Bill 148 is a very complete "Vital Statistics" measure that has received universal endorsement. H. B. 182 you will note is a "State Board of Health" measure, making the State Veterinary Surgeon a member of such Board, which is another recognition Montana has afforded the veterinary profession. H. B. 200 amends our sheep inspection law of 1905, curing its defects. H. B. 324 I believe is a very competent livestock sanitary law. There is hardly any doubt but that this law cures all the defects in our old livestock sanitary law and gives us effective working timber. I wish you would read 324 carefully and criticise it unmercifully.

The past Legislature raised the salary of the State Veterinarian to three thousand dollars per year, so I feel that the veterinary profession has been fairly well recognized by Montana's tenth legislative assembly.

We introduced also a Veterinary Practice Bill, H. B. 54, which was unfortunately "killed;" but I desire to call your attention to section 4, which is a reciprocity clause that should be in the practice bill of every state in the union.

We will try to do better next time. Very truly yours,
M. E. KNOWLES.

TREATMENT OF FISTULOUS WITHERS.

AUBURN, ALA., Feb. 15, 1907.

Editors American Veterinary Review:

DEAR SIR:—Last year some veterinarian in Omaha or near there recommended the use of mercuric iodide by smearing the ointment over the inside of the abscess cavities or pus pockets. I tried this until I found it quite impossible to get enough or to retain sufficient of the iodide ointment in the cavities to do any good. Then I decided to smear the red iodide ointment (1 to 5 or 6) over a piece of bandage and pack the cavity full with the smeared bandage. This packing is left in the cavity

48 to 72 hours. In 4 to 6 days another is inserted; and thereafter the cavity is thus packed once every 10 days. Of course all the surgical work should be done in the way of opening cavities, dissecting out necrotic tissue and new growth of connective tissue, or excessive granulation tissue, before the packing is used. Very rarely should the cavities be washed out or flooded with antiseptic solutions. The washing should be confined to the skin surface, to keep it clean around and below the opening. I have used the same packing in poll-evil; in abscess cavities (cold abscesses) at shoulder point; in infected scrotum following castration, and in abscess cavities of strangles. In my experience, it will eliminate the infection of abscess cavities more effectually and rapidly than any other treatment that I have used. I have found the constant washing treatment a farce.

C. A. CARY, B. S., D. V. M.

ALMOST three hundred sat at the banquet of the students and faculty of the Chicago Veterinary College last month.

HORSE MEAT INCREASING AS FOOD.—*Paris, March 2.*—According to official statistics forty thousand horses were eaten in Paris last year. This represents about eleven million kilograms of horse flesh, as compared with the earlier figures of 1899, when a total of only five millions was eaten. This branch of the butcher business in Paris seems to be growing rapidly in favor, so that the horse butcher is assuming the position of quite a respectable competitor with the beef butcher. Horse butchers' signs, with a gilded horse' head above the door, are numerous in certain quarters of the city, and horse butchers are rapidly preëmpting spaces in the market halls. This is particularly the case in well-to-do sections, and the fact almost prompts the suggestion that the doctors are in league with the horse butchers. Doctors are more and more recommending for certain patients who are in need of building up their shattered systems a diet of horse flesh, and for persons whose constitutions are thoroughly run down with weakened stomachs they prescribe the juice of horse flesh, prepared under certain simple conditions, instead of the flesh itself. At the markets during the early morning hours each day men and women stand in line awaiting their turn to be served by the horse butcher. They call for a nice steak or filet, and, being well versed on the matter of quality, are very particular in their selections. Some butchers make a specialty of mule meat, which contains more fatty matter than horse meat.—(*New York Herald.*)

VETERINARY PROGRESS IN ALABAMA.

LETTER OF TRANSMISSAL.

AUBURN, ALA., March 11, 1907.

Editors American Veterinary Review:

DEAR SIRs:—I send you under separate cover a copy of a state live-stock sanitary bill just enacted by the Alabama Legislature, thinking that the REVIEW would be interested in a triumph for veterinary medicine in the South. This measure is the culmination of years of untiring effort on the part of Dr. C. A. Cary, to whom all the credit and much praise are due for framing the act and successfully piloting it through the Legislature. Alabama is to be congratulated upon having, at last, a live-stock law, and, moreover, one that is pronounced by experts on sanitary law and by those highest in authority in the veterinary profession, the most efficient measure of its kind in the States. At least one of the "quarantined states" can coöperate with the Federal government, and has hopes of seeing the finish of the *Boöphilus annulatus*, besides having at its command a means of controlling infectious diseases.

Trusting that you may deem this bill worthy of the consideration of the REVIEW readers, I am

Yours respectfully,

WARD GILTNER, D. V. M.

* * *

BILL PASSED MARCH 6, 1907,

ENTITLED AN ACT, to establish a State Livestock Sanitary Board and the office of State Veterinarian in order to further protect livestock from contagious and infectious diseases and provide for eradicating and excluding such diseases from Alabama.

Sec. 1. Be it enacted by the Legislature of Alabama, That from and after the passage of this act, the commissioner of agriculture and industries of the State of Alabama, the State health officer of Alabama, the professor of animal industry and the professor of veterinary science, of the Alabama Polytechnic Institute, shall, ex-officio, constitute a board to be known as the State Livestock Sanitary Board. The commissioner of agricul-

ture and industries shall be chairman and the veterinarian on the board shall act as secretary of the board. The State Livestock Sanitary Board shall have full power to make or enact such rules and regulations as they may deem necessary for governing the movement, transportation, or disposition of livestock that may be quarantined as hereinafter provided, on account of being affected with, or exposed to, a contagious or communicable disease, or on account of being infected or infested with the carrier or the carriers of the cause or the causes of a contagious, infectious or communicable disease of livestock.

Sec. 2. Be it further enacted, That the professor of veterinary science of the Alabama Polytechnic Institute, shall act as State veterinarian of Alabama. The State veterinarian shall nominate, and the State Livestock Sanitary Board shall elect, as many assistant State veterinarians and State livestock inspectors as they may deem necessary and as the funds at their disposal shall permit.

Sec. 3. Be it further enacted, That the State veterinarian is authorized and directed to quarantine a stall, lot, yard, barn, pasture, field, farm, town, city, township, county, or any part of the State of Alabama when he shall determine the fact that livestock in such place or places are affected with a contagious, infectious, or communicable disease, or when said livestock are infested or infected with the carrier or the carriers of a contagious, infectious or communicable disease. The State veterinarian or an assistant State veterinarian shall give written or printed notices of the establishment of said quarantine to the owners or keepers of said livestock and to the proper officers of railroad, steamboat, or other transportation companies doing business in or through the quarantined part or parts of the State.

Sec. 4. Be it further enacted, That no railroad company, or the owners or masters of any steam or other vessel or boat shall receive for transportation or shall transport livestock from any quarantined part into any other part of Alabama except as hereinafter provided. No person, corporation or company shall deliver livestock for transportation to any railroad company or sailing or steam vessel or boat in a quarantined part of Alabama, except as hereinafter provided. No person, company or corporation shall drive or cause to be driven, livestock on foot, or transport livestock in a private conveyance, or cause livestock to be transported in a private conveyance from a quarantined

part to a non-quarantined part of Alabama, except as hereinafter provided.

Sec. 5. Be it further enacted, That livestock may be moved within the limits of a quarantined part or from a quarantined part of Alabama only under and in compliance with, the rules and regulations of the State Livestock Sanitary Board. It shall be unlawful to move or to allow to be moved, any livestock from one place to another within the limits of a quarantined part or from a quarantined part to a non-quarantined part of Alabama, in any other manner or method, or under any conditions other than those prescribed by the rules and regulations of the State Livestock Sanitary Board.

Sec. 6. Be it further enacted, That all livestock, except such livestock as are to be used for immediate slaughter, when brought into Alabama by a person, company, corporation, railroad or other transportation companies, shall be accompanied by a certificate of health, and said certificate shall state that said animal or animals are free of contagious, infectious or communicable disease and the carrier or carriers of the cause or the causes of such diseases. This certificate must be made by a qualified veterinarian immediately after he has personally examined the livestock and before the livestock has been shipped into Alabama. This certificate shall be attached to, and accompany, the shipping bill of the livestock to the place to which the livestock is shipped, and the owner of the livestock or agent of the transportation company shall mail or send said certificate to the State veterinarian, immediately following the arrival of the livestock at its place of destination. The State veterinarian shall furnish qualified veterinarians and transportation companies with blank health certificates at actual cost.

Sec. 7. Be it further enacted, That owners, renters, or parties in possession or quarantined livestock or quarantined places shall follow the directions in the rules and regulations of the State Livestock Sanitary Board in cleaning and disinfecting infected livestock and infested and infected quarantined places, and in destroying the carriers of the cause of a contagious, infectious or communicable disease, that infest or infect livestock and quarantined places. Said cleaning of said livestock, and the disinfecting of said places and destroying of said carriers, shall be done by the owners, or the parties in possession of the infected livestock and places, in a reasonable time after receiving a written or printed notice from the State veterinarian, an assistant State veterinarian, or a State livestock inspector.

Any person, company or corporation violating the provisions of this section shall be guilty of a misdemeanor and on conviction shall be punished for each and every violation by a fine of not less than ten dollars, nor more than one hundred dollars, or by imprisonment not less than ten days nor more than sixty days, or by both such fine and imprisonment.

Sec. 8. Be it further enacted, That the State veterinarian, the assistant State veterinarian and the State livestock inspectors are hereby empowered to enter upon the premises or into any barns or other buildings where livestock are temporarily or permanently kept in the State of Alabama in the discharge of the duties prescribed in this act. Any person or persons who forcibly assault, resist, oppose, prevent, impede, or interfere with the State veterinarian, an assistant State veterinarian, or a State livestock inspector in the execution of his or their duties, or on account of the execution of his or their duties, on conviction, shall be punished as provided in section 11 of this act.

Sec. 9. Be it further enacted, That the work of cattle tick eradication or the suppression or eradication of any other infectious, contagious or communicable disease of livestock shall be taken up under the provisions of this act in any county or any part of a county or any part of the State of Alabama, when the State Livestock Sanitary Board may deem it best. The county commissioners of any county in which the State or Federal authorities take up the work of tick eradication or the suppression of any infectious, contagious or communicable disease of livestock, may appropriate, for aiding in such work, such sum as the county commissioners may deem adequate and necessary.

Sec. 10. Be it further enacted, That the State Livestock Sanitary Board may appoint or elect the federal veterinarians and livestock inspectors, who are doing work in Alabama, as assistant State veterinarians and State livestock inspectors; provided, they consent to act without pay from the State of Alabama.

Sec. 11. Be it further enacted, That any person, persons, company or corporation violating the provisions of sections 4, 5, 6, or 8 of this act, shall be guilty of a misdemeanor and on conviction, shall be punished by a fine of not less than fifty dollars, nor more than five hundred dollars, or by imprisonment of not less than one month, nor more than six months, or by both fine and imprisonment.

Sec. 12. Be it further enacted, That there is hereby appro-

prated annually the sum of five thousand dollars to be disbursed under the direction of the State Livestock Sanitary Board to pay the actual expenses of the Livestock Sanitary Board in attending meetings; to pay for the printing of the official blanks, the annual reports of the State veterinarian and the rules and regulations of the Livestock Sanitary Board to pay the State veterinarian five hundred dollars per year and expenses while on actual duty, each assistant State veterinarian five dollars per day and expenses while on actual duty, and each State livestock inspector one to three dollars per day and expenses while on actual duty; and to pay such other expenses as may be necessary in carrying out the provisions of this act.

Sec. 13. Be it further enacted, That the judges of the circuit and criminal courts shall give this act in special charge to each future grand jury impaneled on this State, and that each such grand jury shall be clothed with, and authorized to, exercise inquisitorial power for the carrying out and the enforcement of this act.

Sec. 14. Be it further enacted, that the State veterinarian shall make an annual report to the governor of Alabama, giving a full account of the work done and a detailed report of the money expended.

Sec. 15. Be it further enacted, That all acts not in accord with this act are hereby repealed.

AMERICAN HORSES IN CANADA.

The Quarantine Regulations of the Health of Animals Branch of the Canadian Department of Agriculture for 1907 shows that the lines have been considerably tightened as regards the entrance of animals from the United States, particularly horses.

The Farmer's Advocate, published at Winnipeg, says: "Owing to the conditions under which animals are kept on the Western ranges, it is exceedingly difficult to maintain anything like a complete and satisfactory supervision of health conditions, with the result that in some of the Western States diseases such as glanders, *maladie du coit*, and mange prevail to such an extent that a very large number of the outbreaks which are taking place in Canada can be traced directly to importations of American horses. For several years the Health of Animals Branch of the

Department of Agriculture has been endeavoring to enforce a close and systematic inspection of imported animals and insisting upon the production by importers of a satisfactory health certificate, signed by an official American veterinarian. These measures have, however, proved entirely inadequate, as is shown by the fact that in the Northwest Territories and Manitoba since March 1, 1905, three hundred and forty-seven horses have been slaughtered for glanders, which has been traced directly to American importations, these latter being also undoubtedly responsible for the appearance of *maladie du coit* in Canada, the history of the animals in many cases showing that they were suffering from the disease in a latent form at the time of crossing the boundary. Mange has also been introduced in this way, there being no doubt that the existence of the disease in the Canadian West is entirely due to importations from the range states."

Under the revised regulations unbroken horses are prohibited from entrance into Canada, thereby making a careful examination by its inspectors possible. In the case of animals imported for commercial purposes the following provisions apply:

Sec. 33:—Horses, mules or asses, other than those comprising part of settlers' effects shall be inspected and must be accompanied by:

(a) A satisfactory certificate of mallein test dated not more than thirty days prior to the date of entry, and signed by an inspector of the United States Bureau of Animal Industry; or

(b) A similar certificate from a reputable veterinarian, provided such certificate is endorsed by an inspector of the said Bureau of Animal Industry; or

(c) A similar certificate from an inspector of the Canadian Department of Agriculture.

Section No. 34:—When not so accompanied, such horses, mules or asses must be submitted to the mallein test, either at the quarantine station where entry is made, or under certain restrictions, at point of destination.

Section No. 35:—When tested at the port of entry, if any reactors be found they shall be slaughtered without compensation, or definitely marked and returned to the United States, and must not again be presented for entry. All horses, mules or asses in the same consignment shall be returned to the United States, but the non-reactors may again be presented for entry and further test after the lapse of a period of not less than

fifteen days after the first test, provided that satisfactory evidence is produced to the effect that they have not during the said period been in contact with affected animals. When tested at destination points, all animals reacting to the test will be slaughtered without compensation, while those comprising the rest of the shipment will be detained in quarantine until it is shown to the satisfaction of the Veterinary Director General that they are free from disease.

NUMBER AND VALUE OF FARM ANIMALS.

The Crop Reporting Board of the Bureau of Statistics of the Department of Agriculture finds, from the reports of the correspondents and agents of the Bureau, that the numbers and values of farm animals on farms and ranges in the United States on January 1, 1907, were as follows:

Farm Animals.	Number.	Per cent. com- pared with January 1, 1906.	Average price per head.	Value.
Horses	19,747,000	100.9	\$93.51	\$1,846,578,000
Mules	3,817,000	102.5	112.16	428,064,000
Milch cows	20,968,000	102.4	31.00	645,497,000
Other cattle	51,566,000	98.0	17.10	881,557,000
Sheep	53,240,000	103.0	3.84	204,210,000
Swine	54,794,000	99.5	7.62	417,791,000

The numbers of farm animals, as stated in the above table, represent, as nearly as ascertainable without an enumeration, the actual number of each specified class on farms and ranges on January 1, 1907. The figures are the results of a very careful investigation by the agents and correspondents of the Bureau, who used all available means to secure accurate information; but such results are not strictly comparable with similar data published heretofore, as the reports of agents were made without exclusive reference to the relation they may bear to figures of previous years.

A careful investigation of market movements, census, agricultural, and assessors' reports of various states, and other data, has indicated that the numbers of farm animals reported for several years have been too small. In order to bring the figures

near the actual facts, the Board has made certain adjustments and revisions in the report of January 1, 1906, and the percentages of increase or decrease on January 1, 1907, as compared with the preceding year, have been applied to the revised figures.

C. C. CLARK, *Acting Chief of Bureau.*

Approved: JAMES WILSON, *Secretary of Agriculture.*

AT the clinic of the New York State Veterinary College recently, the operation of resection of the flexor pedis perforans tendon for infected nail prick revealed the navicular bone in such an advanced state of necrosis that Dr. Williams removed the bone entirely. The latest report is, that the horse, while lame, is bearing considerable weight upon the leg; and recovery to the point of usefulness is confidently expected.

MEAT INSPECTORS FOR CANADA.—By arrangement with Veterinary Director-General Rutherford, of Canada, the Chicago Veterinary College gave a special course in meat inspection, beginning March 4th and ending April 6th, thus covering a period of five weeks, and comprising special lectures and the microscopical examination of healthy and diseased tissues, as also practical instruction and demonstrations in company with and under the supervision of the inspectors of the U. S. Bureau of Animal Industry stationed in the various abattoirs and packing plants of Chicago. The tuition fee for the course is \$45. It is the intention of the Canadian authorities to hold a series of examinations at various points in the Dominion shortly after the termination of the course, the passing of such examination being obligatory under the new meat inspection law. The holding of a certificate indicating that the examination has been successfully passed at the end of this course may obviate further examination for service under the Inspection Act. Candidates who attend this course and successfully pass the examination, declaring their willingness to enter the service of the Department as meat inspectors, will receive a bonus of \$100. The Director-General makes it clear that the Department does not guarantee appointments to a greater number than are actually required to carry out the provisions of the Act. It is expected that appointments will be available for about thirty-five qualified inspectors. The salary on entering the service will range from \$1,000 to \$1,200, together with actual and necessary expenses incurred when absent on official duty from place of residence.

DR. GRIBBLE WAS A POET IN YOUTH.

LOS ANGELES, CAL., Feb. 15, 1907.

Editors American Veterinary Review:

DEAR SIRs:—Enclosed find a song written by W. H. Gribble when he was a Junior in Columbia College in '83. I ran across it among a lot of souvenirs of days that will never return. All of the readers of the REVIEW know to what extent Gribble can write prose, but few probably ever suspected he could be a poet or song writer.

He evidently had a bad case of it, and, while I have not seen him in twenty-four years, I have no doubt that he and "Rosa Jane" have been doing first-rate.

If you will reprint this poem in the REVIEW I know it will be a happy reminder to quite a bunch, including W. H. Lowe, Ramacciotti, Cooper Curtice, and many other more or less well-known veterinarians who were at College that winter. But, whatever you do, do not lose this copy, for I prize it very highly.

Yours very truly,

R. T. WHITTLESEY.

* * *

C. V. C. & S. C. M.

SONG.

By WM. HENRY GRIBBLE, OF JUNIOR CLASS.

(AIR:—*Little Rosa Nell.*)

Our College is, we know full well,
The first that's in the land,
And add to this, Professors, too,
That up before us stand.
COLUMBIA'S graduates will be
Soon on the road to fame,
While I shall take the road for home
To see my Rosa Jane.

CHORUS:

But now I'd give the world to be
With Rosa Jane so true,
I die a death with every breath
I draw when far from you.

Let BATES still quiz on Chloroform
And praise Gaultheria high,
While SATTERTHWAITE, with phthisis
lungs.
Makes death to seem quite nigh.
My Heart, and Nerves, and Lungs I
know,
Are subject to my Brain;
Yet still I fear I ne'er again
Shall meet my Rosa Jane.

CHORUS.

Let PORTER talk of Leucocytes
 And Inflammation sore,
 And STICKLER slay from day to day
 Of canines half a score.
 While GUNNING with his manakin
 Describes each Pelvic plane;
 My form is here, my thoughts are
 there,
 Where dwells my Rosa Jane.

CHORUS.

I'll think of LAUDY's Oxygen,
 And Acids strive to learn,
 While MITCHELL's Evolution plan,
 My brain has nearly turned;
 But when to something I change,
 And leave this world of fame,
 I'll take with me, if she will go,
 My darling Rosa Jane.

CHORUS.

Professor BERNS, with keen-edged
 knife,
 Can cut with steady hand,
 While WALTON entertains the class
 With his quotations grand,
 But ready knife, and brilliant phrase,
 Bring naught to me but pain,
 When I am far from home,
 Away from Rosa Jane.

CHORUS.

While RAMSDELL with his Pleurisy,
 His Lenses and Lodestone,
 McLELLAN with his Springs and Shoes,
 Stops Hoof from crowding Bone.
 And DANA with his Catgut thread,
 Ligates each Jugular vein,
 My thoughts still turn in dreamy muse,
 To my sweet Rosa Jane.

CHORUS.

Let FREY still prate and vindicate,
 His Dover's mixtures strong,
 And HEATH extol his Glauber salts
 In praises loud and long.
 While MOORE, the Ophthalmologist,
 Our eyes he tries to train,
 My pulse will thrill, my nerves impart,
 My love for Rosa Jane.

CHORUS.

But ROBINSON and NEWSCHAFER,
 Came near to slip my mind,
 And students CURTICE, KOEMPEL,
 SLEE,
 Who quiz when they have time.
 But when with Sheep skin in my hand,
 I leave COLUMBIA's fame,
 I'll spend less nights with feeble lights,
 And marry Rosa Jane.

CHORUS.

ELEGY ON DEATH OF A MAD DOG.

(This famous poem by Oliver Goldsmith is worth reading to-day.)

Good people all, of every sort,
 Give ear unto my song;
 And if you find it wondrous short—
 It cannot hold you long.

In Islington there was a man,
 Of whom the world might say,
 That still a godly race he ran—
 Whene'er he went to pray.

A kind of gentle heart he had,
 To comfort friends and foes;
 The naked every day he clad—
 When he put on his clothes.

And in that town a dog was found,
 As many dogs there be,
 Both mongrel, puppy, whelp and hound,
 And curs of low degree.

This dog and man at first were friends;
But when a pique began,
The dog, to gain some private ends,
Went mad and bit the man.

Around from all the neighb'ring streets
The wondering neighbors ran,
And swore the dog had lost his wits,
To bite so good a man.

The wound it seemed both sore and sad
To every Christian eye;
And while they swore the dog was mad
They swore the man would die.

But soon a wonder came to light,
That showed the rogues they lied;
The man recovered of the bite,
The dog it was that died.

THERE are 350 students at the Kansas City Veterinary College this session. What's the limit?

STOCK FOODS IN THE LIMELIGHT.—A Bill has been introduced in the Minnesota Legislature requiring a statement to accompany all stock foods offered for sale giving the number of net pounds contained in the package, and the percentage of crude protein, allowing 1 per cent. of nitrogen to equal $6\frac{1}{4}$ per cent. of protein and of crude fat, both constituents to be determined by methods prescribed by the director of the State Experiment Farm. The name of the manufacturer and other data are to be also given. The Dairy and Food Commission is charged with the enforcement of the law and the collection of samples. The chemist of the State Experiment Station will make analyses of samples.

IS A HORSE STABLE A NUISANCE?—A bill has been introduced in the Minnesota Legislature prohibiting the location of livery, feed and sale stables in any block of the platted portion of a city where more than one-half of the property is occupied for residence or hotel purposes without obtaining the written consent of all persons owning real property within 150 feet of such location. The bill does not relate to stables now erected and in active use. The bill further provides that the location or erection of such stables may be enjoined in a suit by any person owning property within 150 feet of the location either with or without a showing of special damage to his property.

SOCIETY MEETINGS.

IOWA VETERINARY ASSOCIATION.

The nineteenth annual meeting was called to order in the Chamberlain, Des Moines, Jan. 28, at 8.30 p. m., by President McNeil, who made an address dealing with timely topics.

Minutes of last regular meeting as published in the AMERICAN VETERINARY REVIEW were accepted. The Secretary's report was read and adopted. The Treasurer's report was read, and the Auditing Committee, composed of Geo. M. Walrod, W. A. Heck and S. K. Hazelet, appointed to audit same. They reported favorably, the report was adopted and the committee discharged.

TREASURER'S REPORT.

<i>Receipts.</i>		<i>Disbursements.</i>	
To cash on hand, Jan.		By Cash, F. W. Meyers, postage	\$21.00
9, '06	\$34.30	" " Bulletin Pub. Co. . . .	25.50
" " Dues 1-7-06 to		" " W. C. Rollins Pub. Co.	4.00
1-7-07 inclu-		" " H. Pester, stenographer	4.50
sive	130.00	" " Hal C. Simpson, salary	50.00
" " Membership		" " Review Pub. Co. . . .	23.00
fees 1-7-06 to		" " Whitehead & Hoag Co.	
1-7-07.	16.00	" " Badges and Express. .	13.25
		" " Johnson & Co. Supplies	1.00
		Cash in Treasury . . .	38.05
	\$180.30		\$180.30

Dr. M. Jacob, Knoxville, Tenn., tendered his resignation, which was accepted, and Dr. Jacob was elected to associate membership.

Dr. G. A. Kay, Nebraska City, Nebraska, tendered his resignation, which was accepted, and Dr. Kay was elected to associate membership.

Dr. Hal C. Simpson reported cases. Dr. W. A. Stuhr suggested cryptogamic poisoning. Dr. W. A. Heck reported similar conditions. Bacteriological examinations by Dr. Albert, of the State University, were negative.

Dr. C. Miller, inspector in charge at Agar Packing Co.'s plant, invited the Association to come to the packing house and view some specimens of tuberculosis in cattle and hogs.

Meeting adjourned to meet at 9 o'clock to-morrow morning.

SECOND DAY—JANUARY 29, 1907.

Meeting called to order by President McNeil.

Dr. S. T. Miller, of Council Bluffs, delivered a talk regard-

ing his duties as milk, meat and fruit inspector of his city. Council Bluffs tried appointing a butcher to this important position, but this was very unsatisfactory on account of petty jealousy. He receives \$75 per month out of the city treasury. At first a charge was made on each shop, but this was unsatisfactory, and on account of the improved conditions the city now makes appropriations to pay his salary. He has police powers and privileges. At the beginning of his service the sanitary conditions were terrible, but by constant watchfulness a great many of the shops have improved by putting in cement floors and walls, so that they can be washed freely. He had no trouble with owners, as all realized that conditions were very bad. Oil is poured on everything that is condemned.

Dr. A. J. Treman reported two cases, "Dentigerous Cyst," and "Hernia of Mesentery into Flank."

Dr. D. O. Knisely, of Topeka, Kans., read his paper on "Acute Indigestion of the Horse."

Dr. A. Ageson was called upon to report his experience with "Lumpy-jaw." The Secretary read the report, and it was discussed by a number. Ageson insists that differentiation between pus from true actinomycosis and the abscess caused by bruises is the odor; the true actinomycotic pus does not have the odor, while pus from a bruise does have.

The report of the Committee on Sanitation was read by Dr. L. M. Hurt, chairman. After discussing the report the meeting adjourned to meet at 1 o'clock.

AFTERNOON—JANUARY 29, 1907.

Meeting called to order at 1.15.

Dr. S. K. Hazelet read his report of a case of "Rupture of the Diaphragm."

Dr. S. H. Kingery reported a case of "Canker of Foot." Cankerous condition covered all of foot, sole and wall. Owner had treated for a year. Had horse brought in and put on operating table, where all diseased tissues were removed, the parts canterized and tar bandages applied. This was followed by nearly all kinds of treatment, with no signs of improvement. The horse was turned out and let run for several months. It was finally brought in again, and the diseased parts cut away as before. Formalin was applied. Excruciating pain followed and a clay bandage applied. This was repeated every four days for four times. Then a fistulous tract leading to the os pedis was discovered. This was curetted and packed with gauze. After recovery from this fistulous tract the horse was

shod, the wall being cut away between nails for bandages, which was repacked with clay. Animal finally recovered, but foot shrank away and became more upright. He knew of the horse for nearly two years afterward, and it was all right. The second case was somewhat similar; used formalin and clay packing, and in 90 days this horse went to market.

Dr. R. R. Dykstra read the report of the Committee on Diseases.

Dr. A. L. Wood read his report of "Abdominal Operations on Dogs."

Dr. F. R. Ahlers read his report of "Sudden Death in a Mare Following Parturition."

Meeting adjourned at 3.30 to go to Agar Packing Co. to view pathological specimens.

THIRD DAY—JANUARY 30, 1907.

Meeting called to order at 7.30 P. M.

Dr. L. U. Shipley read his report of "Cryptorchid Castration," which caused considerable discussion as to the advantages, *pro* and *con*, of packing after operating. Some very good arguments were brought forward, but a majority of those who expressed themselves favored the packing of those cases that needed it.

Dr. J. W. Scott reported a case of "Impaction." This subject brought out considerable discussion, also that rather repeated physics of oil or aloes should be given. A majority seemed to think that it was not advisable.

Dr. W. A. Stuhr read his paper on "Immune Sera."

Dr. D. H. Miller reported a case of "Urethral Calculi of a Dog."

The Legislative Committee made its report, which was accepted.

The Committee on Resolutions reported, which was accepted, and the committee discharged.

Dr. G. L. Buffington reported a case of "Navel Hernia," which was quite thoroughly discussed.

The following officers for the ensuing year were elected: President—J. W. Griffith, Cedar Rapids.

First Vice-President—G. M. Walrod, Storm Lake.

Second Vice-President—G. W. Blanche, Belle Plaine.

Secretary—Treasurer—Hal. C. Simpson, Denison.

Member Executive Committee—R. R. Dykstra, Ames.

Dr. S. Stewart, of Kansas City, invited all to attend the A. V. M. A. meeting in Kansas City next September; also the

Missouri Valley Association in February. A vote of thanks was extended to Dr. Stewart for his kind invitations.

President McNeil in retiring thanked the officers, committees and the members, and called on President Griffith to come forward.

Invitations for the next meeting were presented by Drs. S. T. Miller, Council Bluffs; J. I. Gibson, Des Moines, and P. Malcolm, New Hampton.

The Association was then favored with some singing by Drs. J. I. Gibson and Glen Miller (a son of Dr. D. H. Miller). Both were repeatedly *encored*.

The following were elected to membership: Dr. L. N. McNay, Garden Grove; Dr. A. J. Treman, Lake City; Dr. W. E. Sharp, Newton; Wilton Elery, Anita; H. B. Treman, Rockwell City; J. P. Jorgensen, Elkhorn; P. W. Flickinger, Greenfield; W. H. McLain, Boone; H. L. Pool, Gladbrook; W. F. Miller, Storm Lake; J. A. Hart, Sioux Rapids; Geo. J. Howell, Des Moines; A. F. Reichman, Farley; F. Hasenmiller, Eldridge.

RESOLUTIONS ADOPTED.

Tuberculosis.

"WHEREAS, It is a generally known fact that the stock-owners of the State of Iowa are sustaining material loss from insidious advance, among their herds, of tuberculosis; and

"WHEREAS, It is a fact that, because of the nature of this malady, the time is inevitable when the livestock industry will no longer be profitable; and

"WHEREAS, It has been proven that the dairy products from tuberculous cattle constitute a serious menace to public health; and

"WHEREAS, It has been demonstrated that the disease is a controllable one by the application of certain well-known sanitary measures. Be it therefore

"*Resolved*, That the Legislative Committee of the Iowa Veterinary Association be, and hereby is, instructed to draft such laws as will most effectually suppress and control the further spread of tuberculosis among our farm animals; and be it further

"*Resolved*, That, in order to remove the most dangerous source of exposure to man, laws be drafted whose aim shall be the regulation of the dairy industry in so far as sanitation is concerned, and the control of the sale of all dairy products."

Thanks to the Chamberlain.

"*Resolved*, That we, the Iowa Veterinary Association, thank the management of the Chamberlain Hotel for the use of a room for our meetings, and the courteous treatment they have extended our members throughout the meeting."

THE ATTENDANCE.

Members.—G. W. Giese, Neola; J. S. Potter, Iowa City; Hal C. Simpson, Denison; J. P. Jorgensen, Elkhorn; John Anstey, Massena; P. O. Koto, Forest City; James A. Hart, Sioux Rapids; Geo. W. Blanche, Belle Plaine; R. R. Hammond, Cherokee; H. L. Stewart, Lacona; N. A. Kippen, Independence; A. S. Brodie, Cedar Falls; L. L. Diller, Marshalltown; C. E. Baxter, Oakland; J. I. Gibson, Des Moines; S. T. Miller, Council Bluffs; D. H. Miller, Des Moines; J. W. Griffith, Cedar Rapids; L. U. Shipley, Sheldon; A. F. Baldwin, Creston; S. H. Kingery, Creston; J. H. McNeil, Ames; A. Beck, Auburn; W. A. Stulhr, Ames; James Dixon, Tipton; J. W. Bunker, Winter set; H. L. Pool, Gladbrook; D. E. Baughman, Fort Dodge; E. E. Sayers, Algona; W. W. Talbot, Oskaloosa; Will F. Miller, Storm Lake; A. Kaderabek, Fort Dodge; C. J. Hinkley, Odebolt; A. L. Wood, Hampton; B. F. Barber, Fonda; Geo. A. Scott, Waterloo; R. M. Edwards, Knoxville; J. R. Sanders, Corydon; S. K. Hazelet, Oelwein; F. F. Parker, Oskaloosa; J. W. Scott, Manchester; H. E. Talbot, Des Moines; Carl Olson, Sac City; Geo. M. Walrod, Storm Lake; H. B. Treman, Rockwell City; C. E. Stewart, Chariton; A. J. Treman, Lake City; A. A. Aagesen, St. Ansgar; P. Malcolm, New Hampton; W. A. Heck, West Liberty; G. L. Buffington, Brooklyn; R. R. Dykstra, Ames; W. F. Lazeor, Derby; C. J. Heckard, Wheatland; S. H. Bauman, Birmingham; F. H. P. Edwards, Iowa City; S. Stewart, Kansas City (Honorary).

Visitors.—C. R. Kirk, Chariton; J. S. Anderson, Seward, Neb.; Victor E. Kovar, Chicago; C. E. Hunt, Jas. M. Nelson, W. C. Stewart, W. E. Bemis, H. J. Nygren, A. W. Sprague, J. Lionel Shannon, C. H. Stange, H. O. Mantor, Ames; E. O. Thomas, Kalona; J. H. Gould, U. S. A., Fort Des Moines; Chester Miller, Des Moines; F. W. Law, E. E. Black, P. P. Taylor, H. E. Bockerbaum, Page L. Gilbut, A. I. Kulp, H. E. Trarover, F. C. Gearhart, A. H. Lyenhausen, Ruben J. Moreno, Ames.

CLINIC.

Held at Miller and Gibson's Veterinary Infirmary, 1112 West Locust Street, Des Moines, January 30, 1907.

Peroneal tenotomy for stringhalt, Dr. C. E. Stewart.

Fistula, Dr. S. H. Kingery.

Cunean tenotomy for spavin, Dr. G. A. Scott.

Firing spavin on a mule, Dr. P. O. Koto.

Castrating bull, Dr. J. W. Griffith.

Cutting off long molar and then floating with his new power float, Dr. D. O. Knisely, Topeka, Kans.

Demonstration of passing improved stomach tube, Dr. D. O. Knisely.

Caudal myotomy, Dr. J. S. Potter.

Injured leg, Dr. L. U. Shipley.

Extracting two upper molars of babboon, Dr. S. F. Miller.

Castration of cryptorchid, Dr. C. E. Stewart.

Cropping of puppies' ears, Drs. J. W. Griffith and G. A. Scott.

In addition a number of cases were examined. Some were not considered advisable to operate upon; in others the operation was deferred until the next day and then performed by the veterinarians of the city and a few who remained over for another day. Among the latter was plugging tooth cavity with gutta-percha, femero-popliteal neurectomy for spavin, canker of all four feet in stallion, straightening a congenitally deformed ear, median neurectomy for lameness within feet, and a number of others.

Quite a number of horses were examined for lameness and appropriate treatment recommended for each. A number of high-class bull dogs were exhibited to the members by residents of Des Moines.

HAL C. SIMPSON, *Secretary*.

MISSOURI VALLEY VETERINARY ASSOCIATION.

The semi-annual meeting was held in Kansas City, Mo., February 19th and 20th, 1907. The following veterinarians were present:—Drs. L. P. Arnott, J. S. Anderson, L. R. Baker, R. F. Bourne, F. F. Brown, A. Byrd, L. D. Brown, H. C. Babcock, J. A. Berg, A. F. Baldwin, F. E. Bishop, A. L. Bailey, C. H. Bugbee, G. R. Conrad, L. Champlain, J. W. Chenoweth, C. B. Clement, C. M. Cooper, B. C. Davis, C. H. Davies, W. L. Elliott, R. F. Eagle, T. J. Eagle, L. R. Fauteck, G. M. Fox, G. C. Furnish, C. H. Gaines, W. J. Guilfoil, T. W. Hadley, A. L. Hunt, T. S. Hickman, L. B. Huff, R. H. Hayes, J. L. Hoylman, E. E. Hubbard, E. F. Jameson, A. W. James, T. A. Jones, P. M. James, D. O. Knisley, L. M. Klutz, A. T. Kinsley, T. H. Knaak, W. L. King, B. F. Kaupp, S. H. Kingery, R. Lovell, E.

J. Lutz, J. V. Lacroix, S. T. Miller, G. A. Meixel, J. H. McLeavy, R. C. Moore, G. J. Mutziger, C. B. McClelland, W. B. McAlester, T. C. McCasey, G. W. Merker, W. E. Martin, J. M. Mayes, J. McRoberts, J. L. Meixel, E. J. Netherton, J. L. Otterman, O. C. Olson, R. P. Poage, A. T. Peters, G. F. Punteney, M. A. Peck, E. K. Paine, F. A. Pouppirt, S. A. Peck, X. I. Richmond, F. W. Roach, H. A. Reagor, M. H. Reynolds, A. Ruth, J. E. Strayer, C. J. Shiler, D. C. Scott, M. D. Strong, J. P. F. Smith, S. Stewart, V. Schaefer, E. F. Stewart, P. Simonson, C. Saunders, H. M. Smith, W. M. Taylor, W. E. Van Nordheim, E. A. Van Antwerp, J. Vincent, W. Warren, C. J. Young, and others. 350 students of the Kansas City Veterinary College were guests of the Association.

The meeting of February 19th was called to order at 9.30 A. M. by President Stewart, in the New Casino, 1023 Broadway. Roll-call was dispensed with, as members and visiting veterinarians registered at the door. The minutes of the previous meeting were read and approved. The Secretary then read letters of regret of inability to attend the meeting from Drs. A. E. Hoffman, Rushford, Minn.; J. H. McNeil, Ames, Iowa, and F. E. Ransom, of Washington, D. C. The Secretary then read a letter from Dr. Robt. J. Foster, Veterinarian 12th U. S. Cavalry, Fort Oglethorpe, Dodge, Ga. The following is the letter in part: "I hope that at the February meeting you will take some favorable action towards helping the Army Veterinarian get proper recognition. It will surely take the united efforts of all veterinary societies to bring enough force to bear upon Congress for it to do anything at all for us."

The pending bill before Congress was discussed freely, which resulted in a resolution being passed empowering the President to appoint a committee to draft suitable resolutions. The President appointed Drs. E. F. Stewart, A. W. James and T. C. McCasey on this committee. Dr. M. H. Reynolds said no organized effort was being made in Minnesota, but that individual veterinarians were writing their Representatives and Senators and he believed much good was being accomplished. Dr. T. C. McCasey said not much effort had been made in Kansas as yet. Dr. W. E. Martin said he had written his Congressman and thought many others in Missouri were doing the same.

Dr. S. Stewart then discussed the present status of the veterinarian in the Army, pointing out the fact that the Army Veterinarian was of high attainment and should be given rank and better recognition.

The President appointed Drs. S. T. Miller and A. W. James on the Board of Censors in place of absentees.

The following names, duly vouched for and favorably passed upon by the Board of Censors, were elected to membership:

Missouri—Drs. A. L. Bailey, C. H. Gaines, L. B. Huff, P. M. James, A. T. Knowles, J. H. McLeavy, C. L. Nelson, W. Sorrell and J. G. Steele.

Nebraska—Drs. L. P. Arnott, W. F. Jones.

Kansas—Drs. R. F. Eagle, G. C. Furnish, H. L. Fretz, G. F. Punteney, H. M. Smith.

Minnesota—A. E. Hoffman, M. H. Reynolds.

The Secretary then read the paper of Dr. A. E. Hoffman, of Rushford, Minn., on "*Purpura Hæmorrhagica*," which was freely discussed.

At twelve o'clock Parke, Davis & Co. served luncheon to the veterinarians in the reception hall of their establishment at 1008 Broadway. The veterinarians present were interested in the description of drugs and the methods of selecting and testing the same. The following are a few of the things of interest that were said:—When a quantity of ergot is to be purchased samples are sent to the laboratories, where it is tested. First, a given quantity is given to a rooster of a given weight for a given time. The effect upon the comb is noted, thus determining its effect upon the arterial and capillary system. Second, a given quantity is given to a pregnant guinea-pig of a given weight for a given time, thus noting the effect upon the involuntary muscle fibres of the uterus. If the crude drug does not contain a sufficient strength it is rejected. All drugs thus standardized are of a definite strength. It was ergot that led to the discovery that some other method must be used to standardize drugs than by chemical analysis. The chemical test consists of analysis for the percentage of sclerotic acid and ergotin. The fact that some samples containing the same amount of acid and ergotin would have a more powerful action than others has led to the belief that perhaps some other principle yet undiscovered is contained in this drug. Digitalis is tested upon frogs, noting effect upon the heart, while cannabis indica is tested upon dogs.

The meeting was again called to order at 1.30 P. M. by the President. Dr. A. T. Peters, of Lincoln, Neb., presented the following resolution, which had been adopted at a recent meeting of the Iowa-Nebraska Veterinary Association:—"Resolved, That the Iowa-Nebraska Veterinary Association propose to the

Missouri Valley Veterinary Association that the two associations be merged into one under the name of the Missouri Valley Veterinary Association, provided that all members of the present Iowa-Nebraska Veterinary Association be enrolled in that Association without membership fee; and, further provided, that the Missouri Valley Veterinary Association assume control of and responsibility for the *Bulletin* published by the Iowa-Nebraska Veterinary Association." A motion to accept this proposal was seconded and carried. Dr. A. T. Peters then took a vote of the members of the Iowa-Nebraska Veterinary Association to ratify said amalgamation, which unanimously carried. Dr. A. T. Peters stated that the subscription list to the *Bulletin* numbered about 500.

A motion was made, seconded and carried to change the name of the *Bulletin* to that of the *Missouri Valley Veterinary Association Bulletin*. A motion was made, seconded and carried to retain Drs. A. T. Peters, V. Schaefer and S. Kingery on the editorial staff and three additional members be appointed, and that the President ex-officio be a member of the staff. The President then appointed Dr. L. D. Brown, Hamilton, Mo.; Dr. W. B. McAlester, McAlester, I. T.; Dr. D. O. Knisley, Topeka, Kansas, on this staff.

The Secretary read the following resolution from the Committee on Army Legislation:

"*Resolved*, That the Missouri Valley Veterinary Association now in session at Kansas City, Missouri, ask due consideration of Senate measure 3927 now pending before the U. S. Senate.

Dr. E. F. Stewart	} <i>Committee.</i> "
"Dr. A. W. James	
"Dr. T. C. McCassey	

Dr. A. T. Peters moved that the Chair appoint a committee, consisting of one from each of the following states, Missouri, Kansas, Nebraska, Iowa and Oklahoma, to solicit funds to be turned over to the local committee on entertainment of the American Veterinary Medical Association. Seconded and carried. The Chair appointed Dr. A. T. Peters, Lincoln, Neb.; Dr. S. Kingery, Creston, Iowa; Dr. W. B. McAlester, McAlester, I. T.; Dr. L. D. Brown, Hamilton, Mo.; Dr. Chas. Saunders, Eldorado, Kan.

Dr. D. O. Knisley, of Topeka, Kan., presented a paper on "Scrotal Hernia and its Treatment," which was discussed by Dr. Schaefer and others.

A paper on "Laceration of the Perineum of the Mare," by Dr. E. F. Stewart, of Beatrice, Neb., was next discussed.

Dr. L. M. Klutts, of Clinton, Mo., presented an odontoma which had been taken from a tumefaction in the region of the ear. He stated there was a fistulous tract communicating with the tooth cavity, which had existed for six months before operation. The Doctor also exhibited a specimen of a mummified calf which measured about six inches in length and which had been carried *in utero*, causing barrenness for about two years. The cow became pregnant after the removal of the mummified foetus.

The next case related was a bunch of sheep that had been fed on dry feed, such as chop, bran, etc. Many developed a cough. In case of one that had died, an autopsy was held in which some of the bronchioles were plugged with fine particles of feed inhaled, producing death.

Dr. D. B. Leininger, of Kansas City, Mo., presented a paper on "Pathological Shoeing of Horses," illustrating same by numerous specimens of shoes.

Dr. J. E. Strayer, of Carleton, Neb., reported a case of "Atresia Naris Posticus."

Adjourned at 6 P. M. for dinner.

7.30 P. M. meeting again called to order by the President.

The first paper presented was by Dr. M. H. Reynolds, of St. Anthony Park, Minn., on "Milk as Affected Bacteriologically and Otherwise in Handling, Exposure and Stable Practices." The Doctor illustrated his paper by charts, conveying a graphic idea of the number of bacteria and quantity of dirt contained in milk under various conditions. This paper brought out a lively and interesting discussion.

Following this was an interesting talk by Dr. A. T. Peters, of Lincoln, Neb., on "Scabies of Cattle," illustrating by lantern slides and moving pictures the various dipping vats and spraying machines.

Dr. A. T. Kinsley, of Kansas City, Mo., presented a paper on "A Contribution to the Study of Tumors of the Eye," illustrating the paper by lantern slides, showing the appearance of animals before operation, and, by aid of the projectoscope, microscopic slides of various sarcomas taken from the orbital cavity or adjacent structures were shown upon the screen.

Dr. Chas. Bugbee, Kansas City, Mo., presented a paper on "Tuberculosis," giving a review of the subject up to date.

Adjourned.

SECOND DAY—FEBRUARY 20.

The meeting was again called to order at 9 A. M., in the lecture rooms of the Kansas City Veterinary College.

The Secretary read the paper of Dr. Chas. Steele on the subject of "My Experience with the Stomach Tube," after which Dr. E. A. Van Antwerp, of Brookfield, Mo., gave a few reports of interesting cases.

In the absence of Dr. J. H. Slater, of Richmond, Mo., who was to present a paper upon the subject of "Blind Staggers in Horses, due to Mouldy Corn," Dr. A. T. Kinsley opened a discussion of the subject at the suggestion of the Chair. Dr. Kinsley stated that in 1901 he had investigated this condition in Washington County, Kansas. Sixty head had died, many of which were examined post-mortem. There was noted accumulation of fluid in the lateral ventricles with liquefying necrosis of the surrounding tissue. Dr. Walter Warren stated his experience with mouldy corn a few years ago. In the cases examined post-mortem portions of the brain were found to be soft and in a condition of cell necrosis. The Doctor stated that in a few cases observed in the earliest stages which were taken off of the mouldy feed and given potassium bromide, also careful nursing in a quiet stall and wholesome food, some recovered. Upon further inquiry as to symptoms Dr. Kinsley stated that those he had observed were stupid or of a sleepy disposition with dilatation of the pupil. Some cases, apparently blind, would run into objects, evidently not seeing an individual approaching them.

The next paper was presented by Dr. Lloyd Champlain on the subject of "Open Wounds."

On motion, it was decided that the annual meeting in June should be purely formal in order that a wider interest might be ensured for the American Veterinary Medical Association meeting to be held in Kansas City in September.

At 12 o'clock luncheon was served to the veterinarians present.

SURGICAL CLINIC.

Clinic was convened at 1 P. M. in the clinical amphitheatre of the Kansas City Veterinary College.

Case No. 1, a black stallion; disease, roarer; operation, arytenoidectomy; operator, Dr. J. S. Anderson, of Seward, Nebraska. The horse was given one ounce of chloral hydrate in capsule per os one hour before the operation. The animal was confined by aid of casting harness and held on back, head

extended. Incision was made through the anterior crico-thyroid ligament and by means of instruments the vocal cord and small piece of the arytenoid cartilage were removed.

Case No. 2, a dissecting subject, was used for the purpose of demonstrating the operation of removal of the external alveolar plate for repulsion of the molar teeth. The animal was given two ounces of chloral hydrate in six ounces of water intravenously as an anæsthetic. This proved a very efficient method of producing anæsthesia. Operator, Dr. P. Simonson of Fremont, Neb.

Case No. 3, ovariectomy, heifer, by Dr. H. Reagor, of Cambridge, Nebraska. Operation in standing position, confined by ropes to walls. Incision made through left flank, ovaries removed by aid of spaying emasculator.

Case No. 4, a jack; cystic calculus. The animal was confined upon the operating table in a lateral position. The operation consisted of opening the urethra just above the ischial arch, grasping the calculus by means of lithotomy forceps and removing the same. The calculus measured about one and one-half inches long by one inch in thickness.

This concluded the two days' session.

B. F. KAUPP, *Secretary*.

NEBRASKA VETERINARY MEDICAL ASSOCIATION.*

The Nebraska Veterinary Medical Association started the meeting with a clinic on Monday morning at 9.30. There was an unusually large attendance at this early hour. There was sufficient clinical material and the large room used for stock judging and clinical work by the department of Animal Pathology was ample for the members to see the operations as well as to visit. The clinic was private, only the members and their friends being admitted. This and the large amount of clinical material made it a decided success. Those who took part in the operations were Drs. Simonson, Schaefer, Anderson and Tuck. These were assisted by some of the other members.

At 2 o'clock Professor Smith gave a stock-judging demonstration in the stock-judging pavilion. This was attended by all members who attended the meeting and it aroused a great deal of interest. Many questions were asked relating to the judging of live stock.

After spending a profitable hour in the pavilion Dr. Kniseley, of Topeka, demonstrated the use of the stomach tube in digest-

*From the Iowa-Nebraska Veterinary Bulletin for February.

ive disorders. A great deal of interest was centered on this operation, for it is one of vital interest to every practitioner and it brought forth a great deal of discussion. Dr. Kniseley answered in a very brief way all of the questions that were asked.

The meeting was then called to order in the lecture-room and the literary program followed. After reading the minutes President Simonson gave his address, which was brief and to the point. He spoke of the prosperity of the veterinarians of our state and of the work that was before them at this time.

The State Law was then freely discussed by most of the members present. It was the consensus of opinion that our law is a very good one, but that the members had to a great extent mistaken the power and the office of the State Board. The criticisms that were brought forth were to an extent just and no doubt resulted in bringing about a much better understanding of the law and a better feeling between the members and the Board. After discussing this law for nearly two hours the meeting adjourned to attend the banquet at Lindell Hotel.

The banquet was a decided success; covers were spread for fifty. It was an innovation to have the ladies present. Those present were Mrs. Simonson, Mrs. Jensen, Mrs. McEachran, Mrs. Peters, Mrs. Maggi, and Mrs. DeButts. The guests present were Senator P. F. Dodson, Senator L. Goodrich, Senator J. P. Latta, Hon. F. J. Davis, Hon. S. Logsdon, and Hon. C. E. Noyes. Dr. H. Jensen as toastmaster was a decided success. Mrs. DeButts rendered some beautiful songs and Professor Maggi gave some eloquent recitations. The toastmaster then called on some of the visitors and on some of the older members of the profession. The remarks were short and to the point. It was the consensus of opinion that those who attended the meeting should bring their ladies to the annual meeting and to the banquet.

The meeting was called to order on Tuesday morning at 9.30 Dr. Kniseley was the first one called on to read his paper, which was very instructive. He had given his subject a great deal of thought and thereby informed the practitioners present the results that he had obtained for the last few years with the various kinds of tubes, giving in detail the advantages of the tube when applied. It was brought out in the discussion that one must practice using the tube for some time to really appreciate its value and to become proficient in operating the same. The Doctor did not mean to imply that the tube was difficult to insert, but he wanted to impress the members that "practice

makes the master," no matter how simple the operation may seem. It was certainly a treat to the Association to be favored with a paper so well prepared.

Dr. Bostrom's paper was appreciated very much, for it gave the situation of the veterinary conditions in our state and what the practitioner as a rule has to contend with. His paper showed that he was thoroughly conversant with the conditions of a country practitioner and brought out a liberal discussion.

Dr. Gain gave a paper entitled "The Perfect Horse." The Doctor gave some of his observations while judging at county fairs and cited the conditions found at these fairs and how they have improved. He also brought forth a discussion on soundness—the defects that are most commonly found in horses. This is a vital question. He pointed out the value of having a law poses. The paper was discussed to some extent, but not as freely as it should have been. Our state is not up to the times in this respect as other states are, but the time is not far off when the veterinarians must take a lively interest in the subject.

Next was a paper on "Tuberculosis in Hogs," by Dr. Peters. The speaker brought forth the rapid increase of this disease in our state and cited the conditions that the packers are trying to place on the producer. Ways and means should be found to detect this disease in the early stages, so that the producer can clean up his herd. This is where the difficulty arises in stamping out the disease—no sure method has been devised whereby a breeder can be protected in building up a herd of hogs free from this disease. The speaker also drew attention to the losses of animals condemned that only showed glandular affection. The question arose whether all of these glands supposed to be tubercular in hogs were really of a tubercular nature. This talk brought forth a discussion, which was participated in by Drs. Brown, Jensen, Ebbitt, and many others. The noon hour being at hand the discussion on this subject was brought to a close.

The meeting was again called to order by the chairman at 1.30. Dr. B. H. Ransom, of the Bureau of Animal Industry, gave a very fine talk on parasites. He gave the detail of the work that is being done by his department with small parasites, especially the twisted wire worm of sheep. The Doctor was very entertaining in describing the life history of parasites. It was especially instructive to the members present to know what his department was doing and the many experiments that

were under way at this time. Little do we know how injurious these parasites are, and appreciate the work that the Bureau of Animal Industry is doing at this time. After hearing Dr. Ransom's talk every veterinarian should become more familiar with the parasites that infest the domestic animals and become more familiar with the life history and habits of the same.

In the absence of Dr. Heald, who was to talk on corn molds, this subject was freely discussed by many of the members. It was regretted that Dr. Heald could not be present to present his paper. It was the opinion of many that some molds are dangerous, and that where forage is badly affected with molds it is better to discontinue feeding the same. The fact was also brought out that such food was not so dangerous in mild weather as it was in colder weather.

Dr. Drasky was then called upon to report an interesting case—that of a ridgling which had been operated on by Dr. Anderson. It was found by the operator that there were no testicles present, this being the first that the operator in his many years of experience had ever witnessed. The animal died some days after the operation. The specimen was presented and showed that no testicles were present, and that the animal was half male and half female. This was of great interest to the members present.

The Association meetings were discussed. It was thought that there were too many meetings, and a resolution was introduced to change the by-laws so that the State Association only meets once a year. This brought out a liberal discussion. The locations of the meetings was also discussed, many of the members argued that the meetings should be held in different parts of the state, stating that it would do the association more good. A committee was appointed with power to act to canvass the situation, whether it would be advisable to meet in Lincoln or in Omaha the next time. The committee hopes to receive suggestions on this subject from the members who attend these meetings. This can either be sent to the committee or discussed in the journal.

The Association unanimously endorsed Dr. C. A. McKim for reappointment as State Veterinarian, and the Secretary was instructed to forward the resolution to the Governor.

The following were present: J. S. Anderson, Geo. H. Baxter, John A. Berg, Alfred Bostrom, E. T. Bowers, J. C. Bowman, M. V. Beyers, A. W. Carmichael, W. H. Cole, J. A. Decow, J. J. Drasky, Richard Ebbitt, J. H. Gain, H. N. Hall,

R. A. Huntley, Hans Jensen, Theo. Knaak, Roy Lovell, I. W. McEachran, C. A. McKim, Geo. Meixel, A. A. Munn, W. E. Von Nordheim, E. K. Paine, A. T. Peters, Herbert Pew, H. L. Ramacciotti, J. A. Royce, V. Schaefer, Peter Simonson, J. D. Sprague, E. F. Stewart, D. F. Stouffer, E. E. Trabert, W. H. Tuck, Geo. P. Tucker.

VETERINARY MEDICAL ASSOCIATION OF NEW YORK CITY.

The March meeting took place on the evening of the 6th, and the attendance was large and representative of all phases of the profession in the metropolitan district, while there were a number of out-of-town visitors. After the minutes of the February meeting were read, the meeting at once took up the revision of the Constitution and By-laws through the committee appointed at the last meeting. This committee, composed of Secretary Blair and Dr. Mangan, reported through the former, who read the various sections and the changes suggested, the most important of which was a broadening of the field of the Association by the substitution of the word "City" for "County" in the name of the organization. While it has upon its roll members from all the boroughs of the city and not a few from points quite a distance outside, the name has evidently deterred many from connecting themselves with it, under the idea that the membership was confined to New York County. It may be said that the name itself does not restrict its membership area, and that qualified veterinarians are eligible wherever they may reside. It is believed that the organization can be made a great instrument for good for veterinary science and its members, and these are the only objects which it has, as stated in the Constitution. Two hundred and fifty copies were ordered printed, with a list of members following.

After the adoption of the revised Constitution and By-laws, the President introduced Dr. W. G. Hollingworth, of Utica, N. Y., who presented the subject of "Dairy Inspection." The Doctor had brought with him, packed in ice, a dozen bottles of milk, which had been drawn from the udders of a herd of cows kept under his supervision three weeks previously. He explained that these cows were free from contagious diseases, they were carefully cleaned and disinfected before each milking, their udders, tails, flanks and quarters being washed in an anti-septic solution; the milkers' hands were disinfected, they were

dressed in clean duck suits, and the milk was drawn into a pail having but a small opening for the entrance of the streams from the teats, and immediately that the milking was completed, the pail was taken out of the stable the milk strained into bottles, and kept at a uniform temperature of 50° F. The sample bottles which he presented were closed with paraffine caps, and when opened the milk was found sweet and palatable, most of the members drinking from the bottles with a relish. One veterinarian secured an unopened bottle and placed it at the same temperature at which it had been kept to see how long it will remain sweet and wholesome. The essayist went into the subject largely from a practical standpoint, and showed that the producer had but little incentive to raise the best quality of milk, since there is no distinction in price. He knew from experience that such milk as he had brought with him could not be produced for less than three cents a quart in the winter time, and that was about the highest price that is offered for farmers' milk by wholesalers. - He pointed out that considerable legislation will have to be enacted in order to make dairy inspection effective, since tuberculous cows will have to be removed from the herds before the milk can be freed of tubercle bacilli. This will necessitate compensation by the State to the owners for the diseased animals. There is no question but that great good can be done by improving sanitation and the handling of the milk. Also that such diseases as diphtheria and typhoid fever can be prevented from contaminating the milk by proper inspection; but until tuberculous cows are kept out of the herds the greatest source of danger remains. The paper will be published in full in the May REVIEW.

The discussion of the paper was quite general; Dr. E. A. A. Grange went deeply into the subject of the dangers of infected milk cans. He has been lecturing before the Farmers' Institutes of New York, and he heard the farmers complaining bitterly of the condition in which their cans were returned from the cities, some stating that it was one means of getting rid of the city garbage. He spoke of different forms of organisms that could not be destroyed by simply washing out the cans with warm water, some requiring a high boiling point to kill them. He referred to the specimen of milk which Dr. Hollingworth had brought with him, and said while it was sweet and delicious to taste, there was no certainty that it was wholesome. The bacterial count was necessary to tell the number of germs in it, and the microscope to determine the kind of

bacteria present. He once indulged in some experiments with preserving milk, and congratulated himself that he had discovered a means of keeping it sweet and healthful for an indefinite period, until he placed it under the microscope, and then he found that a slide greatly resembled "an animated roller skating rink on a carnival night." The Doctor seemed to have something up his sleeve and if time had permitted he was prepared to tell how milk cans can be disinfected in a comparatively easy manner. And it is hoped that he will have an opportunity at an early date to complete the narrative.

Following Dr. Hollingworth's subject, Dr. George H. Berns gave a very entertaining description of the "Bayer Operation for Cartilaginous Quittor," which was rehabilitated a couple of years ago by Dr. W. L. Williams. Dr. Berns has been practicing the method extensively since the summer of 1904, and has had uniformly good results from it. He described in a simple manner with the aid of the blackboard, the technic, and was followed by his house surgeon, Dr. Ray W. Gannett, who gave an epitome of some twenty or more cases operated upon since the first of the year, both in Dr. Berns' practice and for other veterinarians. Following this Dr. Berns stated that a horse would be operated on at his infirmary the next afternoon at 2 o'clock, and any of those present sufficiently interested were welcome to attend. Quite a number availed themselves of the opportunity, including the senior class from the N. Y.-A. V. C., and they were well repaid for the trip, for they not only witnessed a well-executed Bayer by Dr. Gannett, but were shown other cases in various stages of healing, as well as a radical operation for suppurative toe-crack by Dr. Atchison, and a post-mortem on an agglutinating case by Dr. Blair.

Dr. E. A. A. Grange then presented his paper on "Artificial Impregnation in Domestic Animals," and he treated the subject in a scholarly manner. Fortunately the REVIEW secured this paper, and will publish it in an early issue. The hour was so late that it could only be discussed superficially, and what was said consisted mostly in inquiries of the essayist as to further details of the fascinating subject, which is becoming so extensively adopted among breeders as to make it imperative that veterinarians should be thoroughly familiar with the details of the procedure.

The President announced that a full program had been secured for the April meeting including a paper on "Practical Disinfection," by Dr. Robert J. Wilson, of the Willard Parker

Hospital, New York, the appointed discussionists being Drs. E. B. Ackerman and Robert W. Ellis; a communicated paper by Dr. William Dougherty, of Baltimore, Md., on "Quality in Horses," being a further consideration of the subject brought forward by Dr. F. C. Grenside at the January meeting; and a case report of "Rabies in a Horse," by Dr. Charles E. Clayton, of New York.
(R. R. B.)

CONNECTICUT VETERINARY MEDICAL ASSOCIATION.

The annual meeting was held Tuesday, Feb. 5th, 1907, at Hotel Hartford, in Hartford.

On account of the severe snow storm, only a few members could get to Hartford, they not arriving before three o'clock in the afternoon, when the meeting was called to order by the President, Dr. Loveland, with eight members present, viz:—Drs. Thos. Bland, B. K. Dow, L. B. Judson, J. H. Kelley, P. T. Keeley, R. P. Lyman, G. W. Loveland and H. Whitney. Visitors:—Drs. T. F. Krey, New York City, and B. D. Pierce, Springfield, Mass. Also Honorary Member H. O. Averill, State Commissioner of Domestic Animals.

Minutes of the previous meeting were read and approved. A letter from Dr. Geo. H. Parkinson, stating he enclosed check for dues, and to cross his name off the books, was read. A motion was made and seconded that the matter be laid on the table and the President appoint a committee of one or more members to confer with Dr. Parkinson to ascertain why he wished his name taken from the membership list of the Association. Motion carried, and the President appointed Drs. Bland and Bushnell.

Reports of the Secretary and Treasurer respectively were read, and accepted by vote. The Board of Censors had no report to make.

Dr. Bland, Chairman of the Legislative Committee, reported his committee had done nothing up to the present time regarding veterinary legislation further than to keep close watch of the bills presented at this legislature, and so far no bill had been introduced during the session which would in any way affect the present veterinary law. After discussing the matter at some length, it was voted that Dr. Bland confer with Senator Hayes, of his city, on the advisability of striking out line five beginning with the word "Nor" and ending with the

word "Dentistry" in line six, of Sec. 7 of Chapter 183, laws 1905.

The unfinished business being disposed of, officers were elected as follows:

President—Dr. J. H. Kelley, New Haven.

First Vice-President—Dr. R. D. Martin, Bridgeport.

Second Vice-President—Dr. F. F. Bushnell, Middletown.

Secretary—Dr. B. K. Dow, Willimantic.

Treasurer—Dr. H. Whitney, New Haven.

Board of Censors—Drs. Bland, Loveland, Crowley, Keeley and Judson.

The retiring President, Dr. Loveland, thanked the members for their kind and courteous manner toward him, also for the loyal and generous support given him in the discharge of his official duties, and asked that the same consideration and support be given his successor. He then called the newly-elected President, Dr. Kelley, to the chair, on assuming which Dr. Kelley thanked the members for the honor conferred upon him, saying he would work for the interests of the Association and the welfare of its members, and would endeavor to follow in the footsteps of his illustrious predecessor.

Dr. Bland moved that the Treasurer send a check for \$25 to Prof. W. L. Williams for his services in coming to Connecticut to perform a second operation on a horse which was originally operated on at the New Haven meeting of the A. V. M. A. Motion seconded and carried.

Dr. Bland read a letter from Prof. Conn, of the State Pathological Laboratory, in reference to a specimen which he had examined. The writer requested that the veterinary profession or members of it use their influence to assist in securing a large appropriation from the Legislature for the State Laboratory at Middletown. It was voted that a committee be appointed to report to this meeting a resolution to be submitted to the Appropriation Committee commending the work of the State Laboratory and asking for a generous appropriation for State Laboratory purposes, and that a copy of this resolution be sent to Prof. Conn, offering a representative of this Association at the hearing if desired. It was further voted that Drs. Bland, Loveland, Lyman and Honorary Member Commissioner Averill be the committee to draw up the resolution. Dr. Loveland asked to be excused.

A recess of ten minutes was declared to give the committee time to attend to the resolution.

After the meeting reconvened a resolution was offered regarding visitors to the association meetings as follows:

"WHEREAS, The Connecticut Veterinary Medical Association was organized and incorporated for the purposes of the advancement of veterinary science and for the furtherance of sociability among practitioners of veterinary medicine, be it

"*Resolved*, That this Association recognize and invite to its meetings such practitioners of veterinary medicine as may be members of national, state, county, or provincial associations, and, further, believing that it will occur to the best interests of the profession and the Association, we hereafter disqualify from admission, other practitioners or visitors, unless duly invited by a member in good standing in this Association."

The resolution was adopted.

Dr. Lyman presented in writing proposed changes of the By-laws, viz.: Change Sec. 2, Art. I, by inserting after the word "Officers," first line, the words, "excepting the Board of Censors," and by adding Sec. 3 to Art. to read: "Sec. 3. The Board of Censors shall be appointed by the President-elect at each annual meeting."

The proposed changes were laid on the table until the next meeting.

The business having been disposed of, the President called on Commissioner of Domestic Animals H. O. Averill for a few remarks pertaining to the work of his office in regard to rabies. Commissioner Averill responded that at the present time there was no law which gave him any power to take any action in the matter, but there is a bill before the Legislature which he hoped would become a law; and if it should, it would make the control of rabies more certain and satisfactory. He also said, on account of the new meat inspection and pure food law, it was becoming more difficult for dishonest dealers to dispose of diseased meat; therefore the work of his office had greatly increased. During the past few months he had received a large number of calls from all over the state to have suspected cases of tuberculosis in cattle examined and condemned.

An interesting and instructive discussion on rabies by most of those present finished the business of the meeting, which closed at 6 P. M.

B. K. Dow, *Secretary*.

VETERINARY ASSOCIATION OF THE DISTRICT OF COLUMBIA.

A meeting was held on the evening of March 6, 1907. There was a large attendance; several applicants were admitted to membership, and several applications were received.

Dr. John Lockwood delivered an address on "Accidental Tenotomy," in which he stated his experience and his treatment, in a very interesting manner, bringing forth many new points of interest.

Dr. H. J. Washburn, Assistant Chief, Pathological Division, Bureau of Animal Industry, read a paper on "Rabies," in which, among other things, he described the methods employed by the Bureau in determining the presence of rabies, post-mortem, including the inoculation method, the preparation and microscopical examination of the Gasserion and plexiform ganglia, and the determination of the presence of the Negri bodies in the brain. In the discussion that followed this paper, it was stated that rabies is more prevalent than was generally supposed, and various measures for its eradication were discussed.

A vote of thanks was tendered Drs. Lockwood and Washburn for their addresses.

The subject of the compulsory testing of dairy cows, and an examination of the water supply of dairy farms, was discussed by Dr. A. D. Melvin, Chief of the Bureau of Animal Industry, Drs. J. P. Turner, H. Young and others.

The subject of the transmission of tuberculosis by means of milk from cows with clinically healthy udders evoked much discussion and difference of opinion. In connection with the bill regulating the production and sale of milk, in and for the District of Columbia, the Secretary read a letter from the District Commissioners, in which they stated that they had not recommended the compulsory tuberculin clause only by reason of their belief in the impossibility of securing its passage this session.

The following veterinarians have been appointed as members of the Board of Examiners for the District of Columbia: Drs. D. E. Buckingham, John Lockwood, H. W. Acheson, H. Young and J. R. Mohler. The Board will meet at once, elect officers and prepare for the examination of applicants. All of the Board are prominent members of the Veterinary Association of the District.

F. M. ASHBAUGH, *Secretary*.

VETERINARY ASSOCIATION OF MANITOBA.

The annual meeting of the veterinarians of the Province was held in Brandon on Thursday, Feb. 21, at the City Hall, when they received an address of welcome from the Vice-President of the Board of Trade. In the absence of the President, Dr. McFadden, the chair was taken by the Vice-President, Dr. Martin.

The following members were present:—Drs. Robinson, Fisher, Coxe, Elliott, McMillan and Lawley, of Brandon; Drs. Dunbar, Williamson, Martin, Woods and Torrance, of Winnipeg; Dr. McGilvray, of Binscarth; Dr. Stevenson, of Carman; Dr. Rowcroft, of Birtle; Dr. Hackett, of Hartney; Dr. Jamieson, of Kenton; Dr. Young, of Rapid City; and Dr. Marshall, of Oak Lake.

The annual report of the Secretary-Treasurer and Registrar showed the affairs of the Association to be in a prosperous condition, the membership ninety-one, and the financial statement showing a satisfactory balance in the bank.

The report of the Committee on Ethics was read and discussed clause by clause, and finally adopted without amendment, and will be incorporated in the by-laws. This code is practically the same as that of the American Veterinary Medical Association.

The following officers were elected for the ensuing year:—

President—W. E. Martin, Winnipeg.

Vice-President—S. A. Coxe, Brandon.

Secretary-Treasurer and Registrar—F. Torrance, Winnipeg.

Examiners—W. E. Martin, F. Torrance, and J. A. Stevenson.

Members of Council, in addition to above:—W. R. Taylor, Portage la Prairie; J. M. Young, Rapid City, and S. Robinson, Brandon.

“Chloroform Anaesthesia” was the title of an interesting paper read by Dr. Martin, in which he described the action of the drug, its effect on animals, and its use in veterinary surgery. A full discussion followed; many of the members relating their experience in chloroforming horses and other animals, and all agreeing as to its great value, not only in preventing pain, but also in abolishing the struggling and movements of the animals, which would interfere with delicate surgery.

The following resolutions were adopted:—“That the Council appoint three members a Program Committee, to assist the Secretary in preparing a program for the next meeting.” That

"the semi-annual meeting be held at Winnipeg." That "the Secretary correspond with some well-known American veterinary surgeons with the object of getting one to attend our next meeting to operate at the clinic." That "a resolution of condolence upon the death of the late R. S. Scurfield, of Crystal City, be passed, and a copy sent to his widow." That "In view of his services to the profession, Dr. S. J. Thompson be elected an honorary member." That "a vote of thanks be tendered the Brandon City Council for their hospitality."

The meeting then adjourned. F. TORRANCE, *Secretary*.

ARKANSAS VETERINARY SOCIETY.

On Tuesday, Feb. 26, the veterinarians of Arkansas met at Little Rock to organize an association. The meeting opened at 10.30 A. M. and continued, with adjournments for meals, till nearly 10 P. M. Dr. Dinwiddie, Pathologist to the Arkansas Agricultural Experiment Station, was asked to take the chair, and the meeting immediately came to order and settled down to the business in hand. It was decided that the name of the organization be "The Arkansas Veterinary Society." The following officers were elected:

President—Dr. W. Lenton, veterinarian to the Agricultural Experiment Station, Fayetteville.

Vice-President—Dr. V. J. Andre, of Osceola, the originator of Bill 114 (now before the Senate) providing for a State Veterinary Examining Board.

Secretary-Treasurer—Dr. B. H. Merchant, of Little Rock.

Committees on Legislation, Finance, Arrangements and By-laws were appointed by the President and a Board of Censors acting in the capacity of an executive committee.

The Constitution and By-laws drawn up by the By-laws Committee were adopted, and among them the Code of Ethics of the A. V. M. A. was incorporated. Future candidates for admission must be graduates of a recognized three-year college and must submit themselves for examination by the Board of Censors.

One honorary member may be elected annually, and Senator, Harrison, of Osceola, Mississippi County, Ark., was unanimously elected as the first in appreciation of the good work he has done for the advancement of veterinary science in this State by introducing into the Senate Bill 114, regulating practice by "Q. H. D's."

The best of good feeling prevailed throughout the meeting, and it was with a feeling of regret that the members said good-bye to one another at the conclusion. Many and hearty were the invitations and promises of welcome should one member chance to meet another.

The society adjourned to meet again next June, when it is hoped that the Committee on Arrangements will have a good program. Every member is looking forward with interest to meeting again the friends that were made at the organization meeting at Little Rock.

The charter members are as follows:—Drs. V. J. Andre, Osceola; B. H. Merchant, Little Rock; J. W. Watson, Pine Bluff; A. C. Deaver, Hot Springs; H. E. Rice, Little Rock; C. W. Temple, Hope; W. H. Crigler, Newport; R. L. Pryor, Clarks-ville; Y. C. Hoskins, Newport; Walter Martin, Jonesboro; C. S. Aldrich, Forest City; J. M. Hudson, Helena; R. R. Din-widdie, Fayetteville; W. Lenton, Fayetteville; X. G. May, Fort Smith; T. A. Mitchell, Texarkana; E. S. Rice, Little Rock; C. Chretien, Little Rock; D. B. Morgan, Fayetteville; Harrison Johnson, Texarkana; D. T. Henderson, Texarkana, and W. W. McCrea, Bentonville.

The committees are as follows:—*Board of Censors*—J. W. Watson, V. J. Andre and H. E. Rice. *Committee of Arrangements*—T. A. Mitchell, B. H. Merchant and X. G. May. *Committee on By-Laws*—H. E. Rice, V. J. Andre and R. R. Din-widdie. *Committee on Legislation*—A. C. Deaver, H. E. Rice and V. J. Andre.

B. H. MERCHANT, *Secretary*.

B. A. I. VETERINARY INSPECTORS' ASSOCIATION OF CHICAGO.

On Feb. 22, 1907, the veterinary inspectors of the B. A. I. stationed at Chicago met at the Pathology Laboratory to organize an association, the purpose of which is to bring the inspectors together for the discussion of subjects of especial interest to the veterinary inspectors, and subjects of interest to the profession in general. The following officers were elected for a term of one year:

President—Dr. H. D. Paxson

Vice-President—Dr. W. B. Henneberger.

Secretary-Treasurer—Dr. R. J. Stafford.

The first regular meeting was held on Friday, March 1st,

at 8 P. M., at the Pathology Laboratory. A constitution and by-laws were adopted and other necessary business transacted.

Dr. A. English read an excellent paper on "Extra-Uterine Gestation in a Sow." An interesting discussion followed, which was participated in by a large number of the members present. Regular meetings will be held on the second Friday evening of each month. One or more papers will be presented at each meeting, followed by a general discussion.

R. J. STAFFORD, *Secretary*.

316 Exchange Building, U. S. Yards, Chicago, Ill.

NEW YORK STATE VETERINARY COLLEGE ALUMNI ASSOCIATION.

The first annual meeting was held at Ithaca, Feb. 20, 1907. There were members present from the classes of 1899, 1900, 1902 1903, 1904, 1905, and 1906. From the number of alumni present, and the many letters of regret, it is assured that the alumni body are interested in the perfection of the association. The following officers were elected for the ensuing year:

President—Dr. R. C. Reed, of Elmira.

Vice-President—Dr. C. H. Taylor, of Niagara Falls.

Secretary-Treasurer—Dr. W. J. Taylor, of Ithaca.

Dr. C. E. Shaw, of Brooklyn, and Dr. F. D. Holford, of Avon, were elected members of the Executive Committee.

Following this meeting, the fourth annual banquet of the Society of Comparative Medicine was held in honor of the alumni at the Ithaca Hotel. W. J. TAYLOR, *Secretary*.

CITY PRACTITIONERS were never so busy with foot cases in consequence of the severe street conditions which have maintained for the latter half of the winter.

THE MILLIONAIRE'S STABLE.—An artist was talking about the late Walter Appleton Clark, who died at the beginning of his artistic career. "And Clark," he said, "had a strong sense of humor. I remember going through a millionaire's stables with him one day. You know what a millionaire's stables nowadays are like—floors and walls of translucent white tiles, drinking fountains of marble, mahogany mangers, silver trimmings, and so forth and so on. 'Well, gentlemen,' said the millionaire proudly, 'is anything lacking?' 'I can think of nothing,' said Clark, 'except a sofa for each horse.'"—(*Phila. Bulletin*).

NEWS AND ITEMS.

GEORGE WEISBROD, D. V. S., Brooklyn, N. Y., graduate of the New York-American Veterinary College, died in January.

DR. GEO. F. WESCOTT (A. V. C., '97), of Portland, Me., has recovered from a three months' illness of typhoid, and resumed his practice.

DURING the calendar year 1906, the exports of domestic wheat amounted to 62,850,984 bushels, against 20,738,635 bushels in 1905.

DR. GEORGE H. BERNES, of Brooklyn, N. Y., is soon to begin another addition to his already large infirmary, which will give accommodations for twenty additional patients.

DR. CHARLES BANKS, of Memphis, Tenn., and Dr. Herman H. Weinberg, of Philadelphia, Pa., have recently purchased Humane operating tables, which they have installed in their infirmaries.

DR. M. H. REYNOLDS presented two subjects at the recent Minnesota State Dairy Association — "Tuberculosis Up-to-Date" and "Milk as Affected by Stable, by Stable Practices and Exposures."

SIGN IN A LARGE DAIRY RESTAURANT IN NEW YORK— "This is to certify that I have examined the cattle in the herd of Mr. John Doe, and found them free from disease. [Signed] Richard Roe, V. S."

THE MINNESOTA STATE LIVESTOCK SANITARY BOARD is asking the Legislature for an increase of annual appropriation to \$50,000 and a special appropriation for glanders and tuberculosis work of \$60,000.

DR. CHARLES E. CLAYTON had in his practice the first part of March a very acute case of rabies in a horse, from which he has had bacteriological and inoculation tests made. He will present the subject a little later before the Veterinary Medical Association of New York City.

DR. R. W. A. ENGLISH, Jersey City, N. J., who suffered a most painful accident last August in a runaway, sustaining a compound fracture of the tibia and fibula of the right leg, is slowly recovering. He yet walks with crutches, but can bear considerable weight upon the leg. There is, however, a large bony deposit about the seat of fracture.

THE MISSOURI VALLEY VETERINARY ASSOCIATION, which has absorbed the Iowa-Nebraska Veterinary Medical Associa-

tion, is now the largest organization in the country save the A. V. M. A., and if it continues to grow as it has in the past two years it will soon outnumber the national association. It was a very sensible thing for these organizations to amalgamate.

DR. WILLIAM DOUGHERTY, of Baltimore, Md., was confined to his home through January and February by an attack of the grip, with asthmatic bronchitis, which aggravated his old enemy, rheumatic gout. But we are glad to report him convalescent. His enforced confinement was utilized to tell his fellow-veterinarians just what a "crab" is; and the fruits of his labors will be found in the department of "Original Articles."

DR. I. C. NEWHARD, Chief Veterinarian for the Philadelphia and Reading Coal and Iron Company, Ashland, Pa., has been lecturing to the employes of the company on the subject of "The Mine Mule," having spoken at Tremont, Mahoney City, Ashland, Shamokin, Shenandoah, and Pottsville. The total attendance was 2,127. The object of these talks is to instruct those in charge of these animals as to their nature and care, and to create a sentiment of humanity among the men in regard to their treatment.

DR. C. J. MARSHALL, who has for years been a hard working member of the Pennsylvania State Veterinary Medical Association, always ready for any service which would tend to better the condition of the association and profession, was at the last annual meeting, March 5 and 6, elected to the highest office in the gift of his fellow-members—that of President, and never did that ermine fall upon more worthy shoulders. Marshall's incumbency means that this year is to be one in which a strong effort will be put forth to make the Association a better one—good as it was.

THE KIND OF DOG IT WAS.—The following notice has been published in a northern Peninsula paper by a French-Canadian: "Loosed. One dawg. Been loose him bout three weeks. Him white dawg almost white with him tail cut off close next to her body. Anybody find her bring him to me. I belong to him and shall give good rewards for the same. Black spot on him nose about size fifty cents or dollar piece. Canada money or United States all the same. For yours truly with anxious, Felix Carno, hind side of Methody church about three blocks in the house up-stairs with green painting."—(*Exchange*.)

DR. TAIT BUTLER, State Veterinarian of North Carolina, is the author of a short bulletin on the "Progress Made in Exter-

minating the Cattle Fever Tick in North Carolina," in which he shows that since 1902, when the campaign undertaken by him of controlling the cattle ranges was begun, twenty counties have been added to the tick-free or unquarantined area of the state. He estimates that the released counties sell about \$550,000 worth of cattle a year, and as beef from below the quarantine line brings from $\frac{1}{4}$ to $\frac{1}{2}$ a cent per pound less than beef from north of that line, an annual saving of \$50,000 occurs—more than three times the entire amount spent in the last five years in accomplishing this result. Evidently Dr. Butler is earning his salary.

DR. CLAUDE D. MORRIS, appearing before the committee of the New York Legislature in opposition to the bill to compel the pasteurization of all milk delivered to consumers in New York City, estimated that the cost of compliance with the law would be \$7,000,000 annually. This vast sum in one year would go a long way toward ridding the State of every case of bovine tuberculosis and by proper inspection to enforce rational hygiene which would eliminate the other dangers to health from unwholesome milk. There would thus be a permanent improvement in the conditions, and not a vast sum spent merely to cook the *Tubercle bacillus*, which would necessarily increase when the present meagre precautions are withdrawn and a false sense of security is felt through the operation of pasteurization. What becomes of the positive statement of the French scientists that pasteurization does not destroy the virulence of the germ of tuberculosis?

BUREAU OF ANIMAL INDUSTRY PUBLICATIONS.—The following bulletins have recently been received: "Tuberculosis of the Food-Producing Animals," by D. E. Salmon, D. V. M.; "The Relation of Tuberculous Lesions to the Mode of Infection," by E. C. Schroeder, M. D. V., Superintendent of Experiment Station, and W. E. Cotton, Expert Assistant at Experiment Station; "Experiments with Milk Artificially Infected with Tubercle Bacilli," by Schroeder and Cotton; "The Tuberculin Test of Hogs and Some Methods of Their Infection with Tuberculosis," by E. C. Schroeder, M. D. V., and John R. Mohler, V. M. D., Chief of Pathological Division; "The Eradication of the Cattle Tick: Proceedings of a Conference of Federal and State Representatives, held at Nashville, Tenn., Dec. 5 and 6, 1906;" "The Bacteriolytic Power of the Blood Serum of Hogs," by B. M. Bolton, M. D., Bacteriologist, Biochemic Division. Also the following Circulars: "The Life History of the

Twisted Wireworm (*Hæmonchus contortus*) of Sheep and Other Ruminants," by B. H. Ransom, B. Sc., A. M.; "The New Meat Inspection Law and Its Bearing upon the Production and Handling of Meats," by George P. McCabe, Solicitor for the Department of Agriculture; "The Fecundity of Poland China and Duroc Jersey Sows," by George M. Rommel, Animal Husbandman; "How to Get Rid of Cattle Ticks," by A. D. Melvin, Chief of the Bureau; "Actinomycosis, or Lumpy Jaw," by D. E. Salmon, D. V. M., and Theobald Smith, M. D.; "Some Unusual Host Relations of the Texas Fever Tick," by B. H. Ransom, B. Sc., A. M.; "Stomach Worms (*Hæmonchus contortus*) in Sheep," by B. H. Ransom.

WHAT CAUSES HORSES TO RUN AWAY.—The New York *Herald* has kept a record of one thousand runaway horses, and in its issue of March 3 summarizes the causes which led to the frightening of the animals. It appears that the driver is more frequently at fault than is the horse, and negligence in the care of the harness and vehicle plays an important part. Below is a tabular synopsis of the article:

Negligence of Driver.

Horses left unattended	82
Reins dropped	26
Tail over reins	22

Defective Harness.

Broken rein	97
Broken or misplaced breaching	85
Detached trace	62
Broken bit or bridle	26
Broken girth	10

Defective Vehicle.

Detached wheel	82
Broken whiffletree	34
Broken shaft	21
Broken kingbolt	12
Broken axle	6

Horse Frightened By.

Automobiles	130
Railway trains	72
Being run into	70
Street cars	58
Motor cycles	48
Fireworks	20
Flying paper	16
Fire engines	13

"A COCAINE DREAM."—John D. Rockefeller's \$3,000,000 institute for medical research in this city announces a discovery

which is expected to revolutionize the use of anæsthetics in surgery. The discovery relates to cocaine as an anæsthetic for serious operations. Ether is less dangerous than chloroform, but it stimulates the heart and after its influence has subsided the patient becomes deathly sick. Chloroform does not produce nausea, but it depresses the heart and even a slight overdose is likely to cause death during the period of unconsciousness. Cocaine has heretofore been regarded as available only for minor operations and local applications, such as toothache and external cuts or wounds. Dr. L. Kast and Dr. S. J. Meltzer, of the Rockefeller institute, after a series of elaborate investigations, have found out, however, that cocaine, instead of being a mild drug, in reality exerts in certain dosage a profound and far-reaching influence over the internal organs, which will render it available for serious operations. This is a boon to surgeons as well as patients, because cocaine is not at all dangerous to use and has no bad effects. Involved in the discovery as to cocaine is another curious one of scarcely less importance, namely: That, notwithstanding the long prevailing belief to the contrary among the medical profession, a man's liver and kidneys are as susceptible to pain as his finger or toe. For generations doctors have been regarding the abdominal organs as dead to all sensations, doing their work mechanically and unsupplied with sensory nerves. It is in exploding this theory of "dead" organs that the scientific experts of the Rockefeller institute stumbled, as it were, on the vastly important discovery as to cocaine. It having been insisted by Lennander, the great Swedish surgeon, that the internal organs could be cut, squeezed or burned without more sensation of pain than would be experienced by the hair or nails, Drs. Kast and Meltzer set out to prove the contrary. They have carried out the experiments on dogs and cats. They ascertained that Lennander, in his experiments, had put his animals under the influence of cocaine and morphine. Lennander had used the cocaine subcutaneously without dreaming it could extend its influence far into the body. So, when the internal organs were tested and showed no pain reaction, it was regarded as conclusive that they were not subject to pain. Kast and Meltzer found that cocaine injected even in the foreleg would produce anæsthesia all through the abdominal region. By further research they established the fact that it overspreads the system through the circulation. Thus, Lennander's animals proved nothing except that their organs had been deadened to pain.—(*New York Correspondence St. Paul Pioneer-Press.*)

VETERINARY MEDICAL ASSOCIATION MEETINGS.

Secretaries are requested to see that their organizations are properly included in the following list.

Name of Organization.	Date of Next Meeting.	Place of Meeting	Name and Address Secretary.
American V. M. Ass'n.....	Sept. 10-13, '07.	Kan. City, Mo.	R. P. Lyman, Hartford, Ct.
Vet. Med. Ass'n of N. J.....	July, 1907.	Asbury Park.	W. H. Lowe, Paterson.
Connecticut V. M. Ass'n.....	.....	.....	B. K. Dow, Willimantic.
New York S. V. M. Soc'y....	Sept., 1907.	New York City	G. T. Stone, Binghamton.
Schuylkill Valley V. M. A....	June 19, 1907.	Reading, Pa.	W. G. Huyett, Wernersville.
Passaic Co. V. M. Ass'n.....	Monthly.	Paterson, N. J.	H. K. Berry, Paterson, N. J.
Texas V. M. Ass'n.....	Cal. Exec. Com.	.....	E. L. Lewis, Waxahachie.
Massachusetts Vet. Ass'n.....	Monthly.	Boston.	F. J. Babbitt, Lynn, Mass.
Maine Vet. Med. Ass'n.....	.....	.....	R. E. Freeman, Dexter.
Central Canada V. Ass'n.....	July, 1907.	Ottawa.	A. E. James, Ottawa.
Michigan State V. M. Ass'n....	State Fair Week	Detroit.	Judson Black, Richmond.
Alumni Ass'n N. Y.—A. V. C....	April, 1907.	141 W. 54th St	T. F. Krey, N. Y. City.
Illinois State V. M. Ass'n.....	July, 1907.	Springfield.	N. I. Stringer, Paxton.
Wisconsin Soc. Vet. Grad.....	.....	.....	S. Beattie, Madison.
Illinois V. M. and Surg. A.....	.....	Decatur.	C. M. Walton, Rantoul.
Vet. Ass'n of Manitoba.....	Not Stated.	Winnipeg	F. Torrance, Winnipeg.
North Carolina V. M. Ass'n....	.....	.....	C. J. Fleming, Winston-Salem
Ontario Vet. Ass'n.....	Summer 1907.	Ottawa.	C. H. Sweetapple, Toronto.
V. M. Ass'n New York City....	1st Wed. ea. mo.	141 W. 54th St	W. Reid Blair, N. Y. City.
Ohio State V. M. Ass'n.....	.....	Columbus.	W. H. Gribble, Wash'n C. H.
Western Penn. V. M. Ass'n....	1st Wed. ea. mo.	Pittsburgh	F. Weitzell, Allegheny.
Missouri Vet. Med. Ass'n.....	.....	.....	F. F. Brown, Kansas City.
Genesee Valley V. M. Ass'n....	uly, 1907.	Rochester.	J. H. Taylor, Henrietta, N. Y.
Iowa Veterinary Ass'n.....	.....	.....	H. C. Simpson, Denison, Ia.
Minnesota State V. M. Ass'n...	July 10-11.	Mankato.	C. A. Mack, Stillwater.
Pennsylvania State V. M. A....	.....	.....	C. J. Marshall, Philadelphia
Keystone V. M. Ass'n.....	Monthly.	Philadelphia.	A. W. Ormeston, 102 Her- man St., Germantown, Pa.
Colorado State V. M. Ass'n...	1st Mon. in June	Denver	M. J. Woodliffe, Denver.
Missouri Valley V. Ass'n.....	June, 1907.	Kan. City, Mo.	B. F. Kaupp, Kansas City.
Rhode Island V. M. Ass'n....	June and Dec	Providence.	T. E. Robinson, Westerly, R. I.
North Dakota V. M. Ass'n.....	.....	.....	C. H. Martin, Valley City.
California State V. M. Ass'n....	Mch. Je. Sep, Dec	San Francisco	C. H. Blemer, San Francisco.
Southern Auxiliary of Califor- nia State V. M. Ass'n.....	Jan. Apl. Jy. Oct.	Los Angeles.	J. A. Edmons, Los Angeles.
South Dakota V. M. A.....	.....	.....	E. L. Moore, Brookings.
Nebraska V. M. Ass'n.....	.....	.....	Hans Jensen, Weeping Water
Kansas State V. M. Ass'n....	Jan. 1908.	Manhattan.	Hugh S. Maxwell, Salina.
Ass'n Médécalle Vétérinaire Francaise "Laval,".....	1st & 3d Thur. of each month.	Lect. R'm Laval Un'y Mon.	J. P. A. Houde, Montreal.
Province of Quebec V. M. A....	.....	Mon. & Que.	Gustave Boyer, Rigand, P. Q.
Kentucky V. M. Ass'n.....	Nov 19, 1907	Not decided.	D. A. Piatt, Lexington.
Washington State Col. V. M. A.	Monthly.	Pullman, Wa.	Wm. D. Mason, Pullman.
Indiana Veterinary Association.	An'l Jan., '08.	Indianapolis.	E. M. Bronson, Indianapolis.
Louisiana State V. M. Ass'n....	.....	.....	E. P. Flower, Baton Rouge.
Twin City V. M. Ass'n.....	2d Thu ea. mo.	St P.—Minneap	S. H. Ward, St. Paul, Minn.
Hamilton Co. (Ohio) V. A.....	April 2, 1907.	Cincinnati.	Louis P. Cook, Cincinnati.
Mississippi State V. M. Ass'n...	.....	.....	J. C. Robert, Agricultural Col.
Georgia State V. M. A.....	July 4, 1907.	Atlanta.	L. C. Willoughby, Experiment
Soc. Vet. Alumni Univ. Penn...	June, 1907.	Philadelphia	B. T. Woodward, Chicago.
Virginia State V. M. Ass'n....	.....	.....	S. C. Neff, Staunton.
Oklahoma V. M. Ass'n.....	.....	.....	W. H. Martin El Reno.
Veterinary Practitioners' Club.	Monthly.	.....	A. F. Mount, Jersey City.
Vet. Ass'n Dist. of Columbia...	Last W. ea. mo.	2116 14th St. N. W.	F. M. Ashbaugh, Wash., D C
B. A. I. Vet. Insp. Ass'n. of Chicago.....	2d Fri. ea. mo.	Chicago.	R. J. Stafford, U. S. Yards.
Arkansas Veterinary Society...	June, 1907.	Little Rock.	B. H. Merchant, Little Rock

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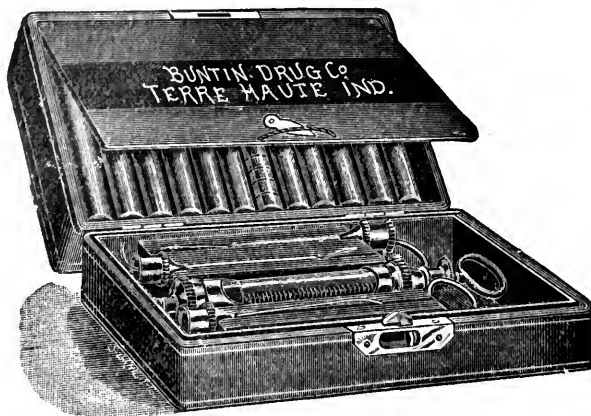
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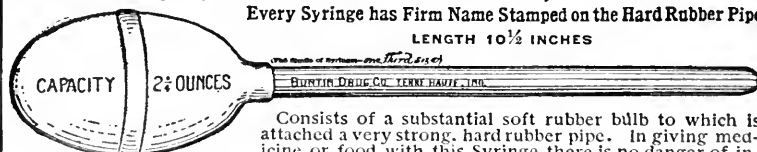
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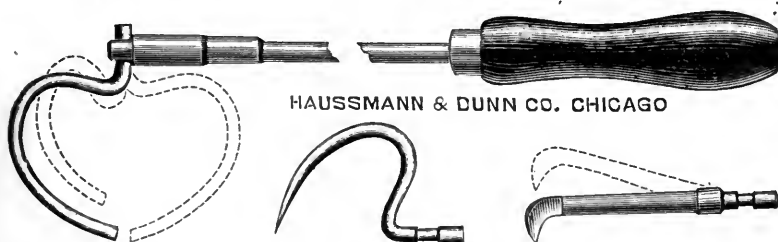
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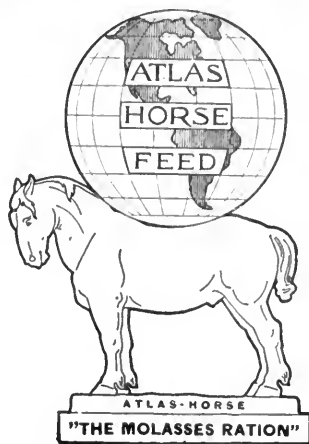
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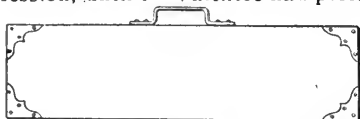
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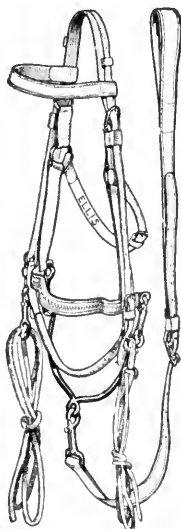
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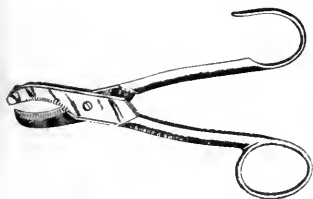
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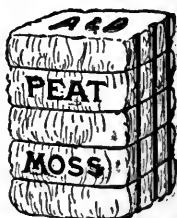
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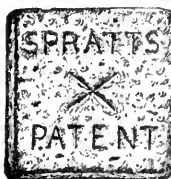
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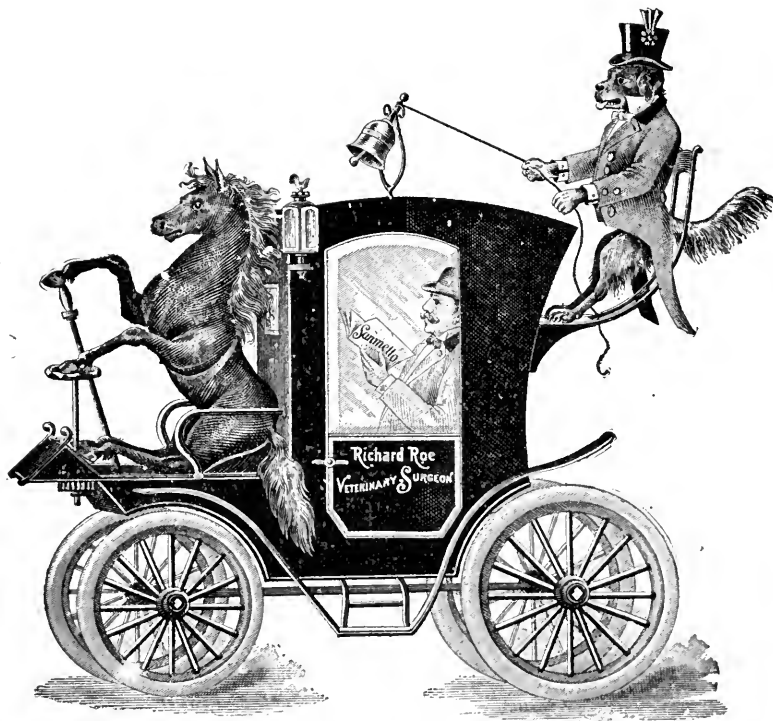
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AMERICAN VETERINARY REVIEW.

MAY, 1907.

EDITORIAL.

EUROPEAN CHRONICLES.

PARIS, FRANCE, March 15, 1907.

THORACENTESIS has received at the hands of Prof. C. Cuny, of the Lyon Veterinary School, a magistral consideration, which was published in the journal of that institution. The gentleman opens his remarks by saying that *pleurisy* in horses is always a disease exceptionally serious, and, notwithstanding the statements of some authors, ordinary hygienic and therapeutic means, when used alone, are generally powerless and at best have only for effect to postpone the fatal results. The only heroic and likely-to-be successful treatment is thoracentesis. Many are the evidences that speak in its favor and it is surprising that veterinarians of to-day should hesitate in resorting to it.

If the puncture of the chest has been feared and rightly condemned previous to the pre-antiseptic period, to-day all authors are ready to proclaim its innocuity. As Cadéac has said: "The possible infection of the pleura by pyogenic and septic germs is independent from the operation; the operator is exclusively responsible for it."

* * *

A first question presents itself: *Which is the most favorable time to perform the operation?*

For a long time it was considered useless to perform it during the period of increase of the disease, because at that time the fluid was to be reproduced as soon as the puncture was through with, and on that account no benefit could be gained. It was said to be better to wait the time when the exudate had little or no tendency to return, and when the remainder of the liquid would likely be resorbed more readily. These reasons are good, but recent observations have seemed to show that the results were so much more beneficial if the operation was performed earlier. Most writers are of that opinion, and many say that fatal results are due to too much waiting. Early and repeated thoracentesis, says one. Another adds that the operation fails when one waits too long, because the collection has invaded a great portion of the pleural cavity and thick and numerous false membranes have been formed. But, on the contrary, the results will be satisfactory and the disease controlled when no false membranes are formed and the pleura is still in an acute inflammatory state. Early interference is, then, the proper indication.

* * *

But another problem faces the operator: *What quantity of fluid must be removed?* Professor Lienaux, of Bruxelles, sees in the exudates a natural means of production. It plays an important part in the struggle against infection, because it contains phagocytes and bactericidal substances. Remove a part of this effusion, says the Professor, is to reduce the efforts of nature. Complete removal of the fluid is, then, contrary to those efforts of nature. It is true that the removal of too large a quantity of fluid is not without danger. It is often followed by fatal syncope.

This rapid death, says Cadéac, cannot be attributed to the acute œdema of the lungs, but it has often for cause a spasm of the heart, a cerebral embolus, a cardiac and pulmonary thrombosis.

When one performs thoracentesis, he must know when to stop. Some remove the canula as soon as the pressure of the

flow slackens, or when the stream is intermittent. Others are guided by the physiognomy of the patient. Mouquet says "the animal shows plainly when one must stop the escape of the fluid. He becomes uneasy, anxious, impatient. The respiration is accelerated, there are spells of coughing. *Dyspnoea* and *cough* are the principal indications."

* * *

The puncture is often completed by a washing of the pleura with a tepid antiseptic solution. Sulfo-phenol of zinc at 3 per cent. or of permanganate (1 in 1000), or, again, of sublimate (1 in 2000 or 5000). These are not essential. Simple puncture is often sufficient or can be repeated without danger. The complications come from improper attention and infection of the pleural cavity with transformation of the clear exudate into a purulent collection. Yet a small quantity of air in the pleura or even a wound of the lungs are not necessarily followed by serious accidents.

The effects of thoracentesis are immediately manifested by a reduction in the local and general symptoms. An easier dilatation of the lungs, a return of the circulation, a more active nutrition and an arrest in the threatening atelectasia are the results.

As a complement of the operation, washing of the blood is sometimes resorted to by the injection of artificial serum. Cases of rapid recovery by the addition of this treatment are on record—most satisfactory results having been obtained in fifteen, yes, in ten days.

Certainly with such statements, pleurisy has lost much of its severe character, and its mortality can be considerably reduced, if our practitioners will resort more to this mode of treatment.

* * *

ANÆSTHESIA BY CHLORAL HYDRATE.—Is it not quite strange that having so many recognized properties, such little use should be made of them, and that chloral should enter so little into general practice?

A comparatively powerful antiseptic, an anæsthetic and antispasmodic agent of no little value, an excellent stimulant, when applied externally for the dressing of suppurative wounds and foul ulcers, a very good antidote in cases of strychnine poisoning, it possesses hypnotic properties of superior certainty and of great safety. Speaking of experiments that he had made with it, Director Arloing has said : "Chloral produces with certainty deep anæsthesia without the danger of producing syncope and respiratory troubles, which occur so suddenly with the use of chloroform and ether."

Its properties as an anæsthetic and antispasmodic are, to my knowledge, taken more advantage of in the States than in Europe, and it is surprising how little its use is recommended in the treatment of spasmodic colic, so extensively practiced by American veterinarians. But why should its hypnotic influence be neglected ?

Its administration by venous injections exposes the individual to whom it is made to serious complications, and, notwithstanding the improvements brought upon the original method with which the injections were made, even with perfect asepsy, the administration of chloral by the circulatory canals has not found its way into general practice. It is true, rectal injections as recommended by some, are harmless ; but it is too uncertain or, if it succeeds, it is rare that complete anæsthesia can be obtained. An animal may be put partly to sleep, his struggles may be considerably reduced, but that is all. Peritoneal injections have been recommended by a French surgeon, and are far superior to the two preceding methods, being as certain and less dangerous than the first, more certain and innocuous than the second.

This is the method that Prof. Sendrail, of the Toulouse Veterinary School, uses most exclusively, and which he writes about in the journal of that institution. .

* * *

For a number of years this method has been resorted to principally upon the horses used for the classes on practical

operative surgery at that school. The technic is very simple and is the same for horses or for dogs. A trocar attached to a rubber tube secured to a recipient (a large syringe, a funnel or any kind of vase) are the only instruments necessary. In the upper part of the flank, the trocar is pushed directly through into the abdomen and the tepid anæsthetic solution is injected or poured into the cavity. The trocar is pulled away—the operation ended. No fear of wounding the intestines. The animal stands the prick of the trocar very quietly, except if the solution is concentrated, say at 20 for 100, when slight pain may be manifested when it comes in contact with the serous membrane. A ten per cent. solution is better to use and does not give rise to this trouble. On an average from 25 to 75 grammes of chloral, according to the size of the animal, is sufficient for horses, say about 1 gramme for every 10 kilogrammes of the animal. For the dog, the quantity necessary varies between 2 and 12 grammes or 1 gramme for every 3 kilogrammes of the animal.

With these doses no accident is to be feared, and, as far as the peritoneum is concerned, even with larger quantity and more concentrated solution, after a short time, all inflammatory reaction has disappeared.

* * *

Anæsthesia takes place rapidly. Ten minutes after the injection the animal lies down, stretches and falls asleep. The sleep is deep, sensibility gone and no reaction manifested, whatever the surgical operation may be. Sometimes at the resection of a nerve there is a slight reaction. The state of surgical anæsthesia lasts at least half an hour, but for an hour later the struggles of the patient are weak and rare. When the effects are over, the animal rises, walks a little staggeringly, but all soon passes off. No ill effect remains.

The author concludes: "The ideal calm of chloralic anæsthesia, the perfect security that follows its use, and principally as far as the peritoneal injection is concerned, the simplicity of the technic, the facility and rapidity with which sleep is pro-

duced, the innocuity of the operation, the *possibility* for the operator to apply the anæsthesia unassisted, and to operate afterwards without preoccupation of its working, are so many advantages that they do not require to be insisted upon. It seems evident that the method preconized by Prof. Sendrail deserves attention in the hands of American surgeons.

* * *

PNEUMONIA FROM COAL DUST.—Of all the pneumoconioses, the variety which is due to the inhalation of coal dust, and known as "anthracosis," has not given occasion to much literature, at least in veterinary medicine, if I can judge by the researches that I have made. It is true, it has not with us the importance that it has in human medicine, but still I have no doubt that if our colleagues who may be called to care for animals working in coal mines, would look into the subject, I am quite sure that the post-mortems they would make would prove interesting and that they would meet with lesions similar to those found in people working in the same places, namely, black discoloration of the pulmonary tissues with or without induration, enlargement and blackening of the bronchial glands, chronic bronchitis, cretaceous blackish deposits in the lungs, sometimes pleuritic lesions, etc.

Pathological or experimental pulmonary anthracosis is at present considered as the result of the direct entrance of coal dust into the respiratory tracts and alveoli, where by phagocytosis they have been carried into the pulmonary parenchyma. The respiratory organs are protected from the infiltration of dust, but it is admitted that the protective means are powerless when there are lesions of the respiratory apparatus, or when the proportion of dust in the air is very large.

In the *Annales of Pasteur*, MM. Vansteauberghie and Grysez, collaborators of Dr. Calmette, have lately made special studies of this question of pulmonary anthracosis, and they have come to entirely different conclusions.

Among many of their numerous experiments, they fed adult guinea-pigs with food containing solutions of India ink

or charcoal dust, and after 24 or 48 hours they destroyed them. They found black deposits in the lungs and nothing in the mesenteric glands, while in young pigs fed likewise, the lungs were clear, but the mesenteric glands were black. These gentlemen obtained the same results with coal dust or carmine color in using the œsophageal sound, or in injecting the substance in the peritoneum. And they concluded that: "Physiological anthracosis was due in most cases to intestinal absorption of coal particles. Normally stopped in the nasal fossa and the pharynx, these are swallowed with the saliva and the nasal mucosities, reach the digestive canal, are taken up by the lymphatics and thrown into the general circulation, hence in the lungs—as Calmette has proved it for the tuberculous bacilli swallowed by adult animals.

At his laboratory, Prof. Basset, of Alfort, took up the conclusions related above. He injected smoke black in suspension in bouillon in the last portion of the small intestine of four rabbits. In all the results were negative. He injected in the œsophagus a similar solution in five adult rabbits, and destroyed them between 18 hours and five days. In none did he observe any coloration in the lungs or in the mesenteric glands. He fed four rabbits with oats mixed with coal dust, smoke black, and India ink for 1, 3, 5, and 15 days, with always negative results, no marks of absorption.

Final conclusion: Pulmonary anthracosis is not of intestinal origin!

To a reply made by the first experimentors, other experiments were *de novo* carried out by Prof. Basset, who finally stated and insisted that: In the physiological condition, with guinea-pigs and rabbits, adult or young, insoluble powders which circulate in the digestive canal are not absorbed—even with the partial destruction of the mucous membrane by large and numerous tuberculous ulcers granulations of carmine are not absorbed—inhalations of carmine dust to tuberculous guinea-pigs are followed by its entrance into the pulmonary parenchyma—by inhalation, all pneumoconiosis can be repro-

duced, but by ingestion the result is always negative. Those affections are not of digestive origin.

* * *

The question having been brought before the Academie des Sciences, a commission has been appointed to verify experimentally the results so contrary of the various authors and to settle this important question on the pathogeny of anthracosis.

Let us wait for the report or more experiments.

* * *

PEROXIDE OF HYDROGEN.—It is quite curious, but judging by what appears in print of late, it seems as if the use of oxygenated water was comparatively a new thing in its application in veterinary medicine in Europe, while in America peroxide of hydrogen has been used for years.

From the *Zeitschrift für Thiermedizin*, there appears in the *Revue Générale*, a review of an article from Dr. Zimmermann, of the Veterinary School of Budapest, on the use of that excellent deodorizing and styptic agent, whose antiseptic properties are such that a solution at 3 per cent. is said to have a power equivalent to that of a solution of sublimate at 1 to 1000. Dr. Zimmermann has used peroxide at Budapest in the treatment of wounds, fistulæ, otitis, eczema, stomatitis, and diseases of the eyes, and has recorded the good results he has obtained. Wounds of all kinds have been treated with wonderful success by washing and dressing with oxygenated water at 3.30 per cent. Suppurative and gangrenous processes have principally been benefited. This was due, no doubt, to the mechanical action, the formation of the foam, which occurs by the abundant escape of oxygen gas, which carries away microbes and cleanses the wound. In undermined lesions, dressings with oxygenated water will assist the removal of mortified structures. In the treatment of external otitis, auricular catarrh, the results have been most surprising by the use of a 10 and later of 30 per cent. solution of peroxide. Introduced in the ear, the solution gives rise to abundant escape of gaseous bubbleings, and pus and clots of blood are rapidly expelled. The solution is left in a

few minutes and renewed every 24 to 48 hours until recovery, which occurs in 8 or 10 days. The author records also wonderful results obtained in the treatment of eczema, stomatitis in horses, and, principally, ulcerated stomatitis of dogs, which is so disagreeable by the odor of the mouth and the presence of ulcerative and granulating surfaces. In the treatment of traumatic ulcers of the cornea, in collyria, at 0.5 per cent., it gave good results in conjunctivitis.

* * *

To continue on the same subject. Dr. Domenico Bernardini, of the Milan School, has published in the *Clinica Veterinaria* a little article upon some applications of oxygenated water in surgery. For him also this agent is possessed of most powerful properties, such that it deserves a first place in antiseptic surgery. By the oxygen that it contains, it acts powerfully, not only on the microbes but also on the tissues of the organism, which it stimulates and renders more apt to react. Considering the various methods in which oxygen has been applied, the peroxide of hydrogen, the solution of perborate of soda, the oxygenated water, and after having used all, the author examines the numerous cases where he has obtained the best results: two cases of fistulæ and necrosis of the ligamentum nuchæ, one of enormous fungoid growth of the spermatic cord; two cases of chronic abscesses of the mastoido-humeralis muscle, one serious case of fistulous withers, one of large traumatic serous collection on the thigh, an enormous abscess of the internal face of the leg, a severe lacerated wound with undermining between the elbow and the thorax, and several tumors in dogs. In the cases of fistula of the neck and of the withers, the recovery was surprisingly rapid. In that of the growth of the spermatic cord, where large suppurative collections existed, the suppuration was soon reduced and cicatrization followed. But the most satisfactory was that obtained in a dog, which was in a very poor general condition and had been operated upon for the removal of a tumor, complicated with suppuration and extensive infiltration of the surrounding cellular tissue, all of which was by

the use of oxygenated water changed in very short time and followed by complete recovery.

At the Milan clinics oxygenated preparations occupy as important a place as sublimate in the surgical ward. And it is right!

* * *

TUMORS OF THE ANTERIOR MEDIASTINUM are quite rare in solipeds, their diagnosis is seldom made during life and when they are discovered they are post-mortem surprises.

However, by a careful appreciation of the symptoms they give rise to, such as: the great dilatation of the jugular veins, the localization of a swelling to the anterior part of the body, the presence of a double thoracic exudation and the absence of hyperthermia, a diagnosis may be justified. It is true that it is impossible to exactly precise the nature of the neoplasm and decide whether it is a lymphadenoma, a sarcoma, a cancer, or perhaps only a simple chronic hypertrophied adenitis following some other disease; that cannot be established until after death, as the prognosis is almost always fatal and treatment useless. But, nevertheless, for a scientific and conscientious practitioner, the evidence of a diagnosis made during life will always be gratifying.

It is on that account that the communication made at the Société Centrale by Mr. Douville, adjunct to the Chair of Clinic at the Alfort School, is of unusual interest and very instructive.

* * *

An animal that had never been sick had first a swelling in front of the chest, which soon invaded the lower part of the thorax and in time extended from the base of the neck as far as the sheath. The swelling is cold, painless, puffy, not crepitating and with well-defined projecting borders. Mucous membranes congested, temperature 38.3°C ., pulse small (50), jugular veins tense, dilated; respiration 13, irregular, but without jerks. Percussion of the chest reveals effusion half way on both sides. Heart sounds normal. Fifteen litres. of liquid are

evacuated by thoracentesis. The exudate is slightly rosy. Centrifugated, it leaves a thin red deposit formed of hematics and leucocytes. The good appetite, the low temperature, the general condition exclude the idea of acute inflammatory disease.

The tension of the jugulars, the localization of the swellings to the anterior part of the body, the characters of the exudate, the hearing of the cardiac sounds, make one suspect the existence of an interference in the returning circulation, of an obstacle situated in the anterior mediastinum and probably constituted by an hypertrophic lesion of the lymphatic glands of the entrance of the chest—in abscess or a tumor.

The next day about same condition, except that the pleural effusion has increased, pulse is imperceptible, glosso-facial veins are much dilated. Twenty-five litres more of liquid are evacuated. Tuberculin test negative. The symptoms are becoming more marked, and after five days the animal dropped dead as an attempt is made to walk him out of his box.

* * *

Post-mortem :—Subcutaneous cellular tissues are engorged with limpid citrine serosity ; abdominal cavity contains three or four litres of it. Intestines not inflamed, their walls are thickened, the veins engorged with blood ; lymphatics hæmorrhagic. On opening the chest about 100 litres of fluid escapes ; it is clear, yellowish. The entrance of the chest is completely closed by a neoplastic mass filling entirely the space between the heart and the two first ribs. The mass is adherent to the internal face of the ribs, is as big as a man's head, is irregular, bosselated and formed of two principal lobes, through which are lodged the trachea, the œsophagus, bloodvessels and nerves coming in and going out of the chest.

The microscopical examination revealed its nature—embryonic sarcoma.

* * *

WHAT KILLED THE BIG PARIS ELEPHANT?—"Sahib" was an African elephant which by its size was one of the great curiosities of the Zoölogical Garden in Paris, has just died.

When he entered the garden, he was said to be ten or eleven years old; he was at the time of his death thirty-five. At first he had behaved pretty well and some liberty was allowed him—that is, comparatively speaking. Two years ago he became ugly, and in one of his spells he killed his keeper, choking him with his trunk. After this, he was kept very close and his cage was considerably strengthened. The animal was of unusual strength and could without trouble break a bar of iron as big as the arm of a man. In the last few months he had grown old, was suffering with incontinence of urine, and as he could not be approached to be cleaned, he had sores here and there over various parts of his body. Cutaneous ulcers existed on the legs near the genitals, and on the sides. At the beginning of the winter he began to show that he was losing flesh; in January the appetite failed, and a fatal termination was looked for at an early date. One morning the keeper noticed that he could hardly stand up, and that he supported himself with his trunk, holding on to the bars of the cage. A short time after, he dropped on his hindquarters, finally on the left broad side. His death took place in the late afternoon.

Naturally the papers for a few days after were full of reports of the autopsy. As he had lost flesh considerably, kind people had it that he died from starvation. More knowing ones made his death from tuberculosis. Others with a bad cold, say pneumonia. At a meeting of a scientific society a member reported the cause of death as pleurisy, when one learned member said it could not be, as elephants have no pleura. Finally in the *Revue Scientifique* it is said that the valves of the heart were covered with wide atheromatous lesions, which must have for a long time interfered with the organ's action. That was certainly the cause of death?

If the Zoölogical Garden in Paris had, as in many other countries, a veterinarian attached to look after the general health and condition of their stock, and to make post-mortems whenever necessary, comparative pathology would gain much by it. We have such professional positions in the States, and much

valuable information in comparative pathology is frequently published by them. The communications from Dr. W. Reid Blair, of New York Zoölogical Park, are well known and appreciated by our readers.

* * *

FOREIGN VETERINARIANS FOR MEAT INSPECTION!—*Veterinarians of North America, look out!!!* I do not know if the veterinarians of North America, those that are already, and those that will be as soon as the coming final examinations have taken place, realize the dangers that are in front of them, and if they do, it may be asked, how is it that so many are holders of and candidates for a degree that is supposed to qualify them for any of the specialties pertaining to veterinary practice, but is not. Prof. W. L. Williams has told us there were over two thousand candidates for that degree!

After all, does not a veterinary diploma from what is considered in the States as a recognized school, entitle the holder to a position, after complying with the requirements, slight and insignificant as they are, in the Bureau of Animal Industry, either as veterinary inspector or similar position? If it does, what is the significance of the rumor that I have read in many of the veterinary papers of Europe to the effect that "*to realize the new dispositions relating to the inspection of meat, the United States (read the B. A. I.) needs a large number of veterinarians. As the country is not prepared to furnish them, a delegate is to travel through Germany, France and Switzerland to obtain ELEMENTS TRULY APT to do the work.*" An Italian paper very properly demands to know why Italy should have been left out. I think it is right, as Italian veterinarians are as good as others. I have received a lot of demands from French veterinarians, who are already seeing themselves sailing towards free America. But what can I tell them?*

*A veterinarian is not eligible to take the Civil Service Examination unless he is a citizen of the United States. It is not sufficient that he renounce his native land, and declare allegiance to the Stars and Stripes. He must have taken out at least his second papers, and to do this he must reside in the country for two years after his first papers have been issued.—R. R. B.

No doubt their anxiety to travel may be a compliment to our country, but is it one to Dr. Melvin? Is it one to our colleagues across the Atlantic? I feel quite confident that it is not one to the superiority and excellency of our existing system of education, which fails in bringing out elements truly apt to do the work.

Will that ever change?

* * *

A NEW JOURNAL ON MILK AND MEAT HYGIENE.—MM. Panisset and Cesari, both sanitary veterinarians to the City of Paris, with Mr. Martel, chief of the sanitary service of the Department of the Seine, have started the publication of a monthly having for title *L'Hygiene dela viande et du lait* (the hygiene of meat and of milk). The object of the paper is to add to the great question of hygiene and alimentation in general, the contribution of all veterinarians by their writings and observations relating to the conditions and requirements of alimentary products from animal sources. Questions relating to slaughter houses, abattoirs, markets, meat inspection, milk inspection, and prophylaxy of contagious diseases among animals will form for these able editors a large field of operation.

Two numbers are already out and in the February issue I notice from the pen of Mr. Panisset a comparatively flattering article on the sanitary control of the trade and production of milk in the United States. It is true, it is only an extract from a little work written by Prof. Dr. Ostertag, to which I had occasion to allude some months ago. But as in the article of Panisset he takes the opportunity to point out how the control and inspection in the milk trade is carried out in some of the large cities in the United States—Washington, New York, Chicago, St. Paul, Minneapolis, etc., it is gratifying to know that this condition of things in America is taken notice of by authorized sanitary writers in Europe.

To the new journal, with our welcome, we send our wishes for success.

A. L.

THE TUBERCULIN TEST.

Some five or six years ago, the veterinary profession was roundly denounced by the *Breeder's Gazette* and other influential stock papers for its advocacy of tuberculin as a diagnostic guide for action in ridding dairy and breeding herds of the great scourge of tuberculosis. They contended that veterinarians were merely seeking employment in applying the test, and were neither sincere nor wise in their advice to breeders; that sanitation and isolation would remove both danger and disease; and that the testimony of Koch proved conclusively that there was but little menace to human life, since the disease in bovines and humans was dissimilar and rarely, if ever, transmitted from the former to the latter. The attitude of the profession, in the face of such criticism, was manly and ethical: It avowed its adherence to the comparative infallibility of properly administered tuberculin; reiterated its belief in the great danger from the consumption of milk from tuberculous cows; insisted upon the poll-axe as the only means of ridding our herds from the disease, and then patiently and respectfully awaited the outcome of investigation to prove the wisdom of its contention. To-day there is no well-informed and fair-minded person who will deny the correctness of the position which veterinarians assumed at that time—either as to the virulency and unicity of the disease, or as to the best means of dealing with it.

During the time intervening between Prof. Koch's famous and fatal stand before the London Congress on Tuberculosis and the present day, all efforts at curtailing the prevalence of tuberculosis, by mild methods, have proven worse than useless; the disease has increased alarmingly, not only in cattle but in swine, while the false security engendered by the words of the German scientist has cost thousands of valuable human lives. What benefits may be derived through serum inoculations are yet problematic: reports are so conflicting that the subject must remain in abeyance until the value of the methods now in use are proven, or until further investigation shall bring to light something better. Certain it is, that sufficient encouragement

has been offered by serotherapy to justify energetic persistence with the investigations. But, returning to the position which the veterinary profession assumed at the time of Koch's mischievous bombshell, it may be reasonably concluded that had its advice been heeded, even though its drastic recommendations had been considerably modified; the mortality in both the human family and the domesticated animals would have been materially lessened, while a system of sane regulations would be in operation to reduce the percentage of cases gradually year by year.

At last, however, important municipalities are taking up the subject in alarm and with a strong hand, and others will follow of necessity. The District of Columbia has passed a law requiring that all cows furnishing milk for consumption within the District shall be submitted to the tuberculin test, and that all dairies containing reactors shall be excluded from the privilege of marketing their products within that territory until such animals are removed, whether the dairy be located in the District of Columbia or elsewhere. Minnesota is taking up the question in an intelligent manner, and most of the other states are at least preventing the entrance, within their borders, of cattle from other territory which fail to secure certificates of freedom from tuberculosis through the recognized test.

New York City is much exercised over the subject of her milk supply, and this state of feverish solicitude has undoubtedly been precipitated through the Bureau of Animal Industry experiments, which conclusively proved the transmission of tuberculosis through the ingestion of tuberculous milk, and that the germs of other fatal infectious diseases were conveyed through the same medium. While the people are hysterically excited over their proven danger, they are badly at sea as to the best method of purifying their milk supply. The daily press of Gotham is the greatest factor in moulding public opinion, and, as is usual, they are not well informed upon such scientific topics. While Health Commissioner Darlington knows what is best and would put the proper system in operation if he

could, he is dominated by the clamor for pasteurization, and really deserves the plaudits of scientific men for the stoical fortitude with which he has withstood the demand for this unworthy makeshift. His attitude has resulted in the appointment by the Mayor of a Commission of five to investigate the whole subject, who will report their conclusions directly to him. We regret that he ignored the veterinary profession in the make-up of the Commission, for it has shown its ability to advise upon questions where animal diseases are to be dealt with, and a veterinarian or two on that Commission would have added greatly to its efficiency. The profession, however, can afford to await results, and it may be certain that if pasteurization shall be recommended and adopted for New York City, it will be for a short time only, for the steady increase of tuberculosis among the herds supplying the city will so alarm the authorities that compulsory slaughter or isolation will be resorted to upon a scale that will play havoc with the treasury.

It is a senseless proposition to attempt to purify a product by veiling the impurity; the sane way is to *keep the impurity from entering*.

Commercial pasteurization of the enormous milk supply of New York City can only be relied upon when under the strictest surveillance of the Health Department, and it would require more inspectors to watch this process than to supervise the dairies where it is produced, for in the former case the inspection would have to be perpetual, while at the dairies it would require only periodical visits.

If the dealers are to be the pasteurizers, the process is a farce before it begins.

And, then, the effectiveness of pasteurization to destroy disease microbes is denied by some of the best authorities, while it is admitted that the nutritive quality of the milk is vastly deteriorated, and there is considerable interference with the digestive function through its continual use.

Veterinarians are right, and they should not budge from their position.

ILLINOIS HAS REDEEMED ITSELF.

After ten long years of bombardment by the legitimate profession of Illinois, the unworthy occupant of the office of State Veterinarian has been dislodged, and his place has been taken by a veterinarian of character and ability. We disclaim any reflection upon the personality of the recent occupant of the position; his record and character are not under review. The fact that he has never qualified for high professional work is sufficient to condemn the peculiar condition of Illinois politics by which he has held for so long a time an important professional post, one requiring the highest type of the modern educated and fully developed veterinarian. It has been a wreath of sharp and cruel thorns pressed down upon the brow of the profession by successive reappointments, particularly where so many men of the proper type could be found to fill the important office in a manner creditable to the profession and to the great benefit of that Commonwealth.

That this black spot was wiped out on April 9, by the appointment of Dr. James M. Wright, of Chicago, is a source of extreme gratification, and we congratulate the profession of Illinois upon its deliverance from the degrading effects of cheap politics. It is all the more welcome since the appointment of Dr. Wright has not been brought about through political influence, but Governor Deneen recognized the unwisdom of retaining in such an important position one who has never received training which would fit him for such duties in the leading live-stock state of the Union.

The new State Veterinarian is well qualified for the office, is in the prime of life, and may be confidently relied upon to give a good account of his stewardship. Dr. Wright was born in Winona, Illinois, forty-nine years ago, and in early manhood was a school teacher, which he abandoned to enter the Chicago Veterinary College, from which he graduated in 1889, becoming an instructor of obstetrics in his alma mater at the following session, which position he retained until 1892, when he became associated with Prof. McKillip at the time he organized

the college which bears his name, and took a leading position in the extensive practice connected with the school. He remained with the McKillip school as professor of contagious diseases from 1894 to 1901, when he formed a partnership with Dr. L. A. Merillat, and is at the present time senior member of the firm of Wright & Merrilat. When he severed his connection with the McKillip interests he returned to his alma mater, and has filled the chair of cattle pathology there ever since. Not only has his long educational training fitted him for the broader work of the office to which he has been appointed, but he has had extensive experience in state control work, having been an Assistant State Veterinarian of Illinois for the past ten years.

Dr. Wright's appointment is so very important and welcome to the profession at this time that the REVIEW feels perfect justification in giving to the event all the prominence it can, since the presence of a non-graduate in that office has greatly retarded progress in Illinois and elsewhere.

THE A. V. M. A. AT KANSAS CITY.

In four short months the national organization will convene in Kansas City, Mo., and every member who intends to present a paper before that representative body of American veterinarians should notify Secretary Lyman of his acceptance of the oft-repeated invitation to contribute to the literary program at once. It should be deemed a great privilege for any veterinarian to address himself to this body, as it is the highest tribunal in this country, and, in our judgment, in any land. It is so amplified that, in whatever branch of veterinary science one may labor, he will find many in attendance working in the same field, who are able and glad to discuss the perplexities encountered with him. The Secretary of this association has a most responsible position, one requiring comprehensibility, tact, persistence, patience, and an equipoise that will be equal to emergencies. But it is likely that his greatest concern is with the perfection of the literary program. Members are tardy in sending in their subjects, or of indicating that they will be

represented on the program ; they delay until the last moment. Meantime, the Secretary is in continual suspense, and his anxiety unfits him to do his full duty to the Association.

There is every prospect of a record-breaking meeting at Kansas City. It is in the midst of a dense veterinary population ; it has become essentially an association community, and a large increase in membership may be confidently expected. Every veterinarian, who possibly can, should attend in this year of great prosperity in the profession : It will be an outing that will never be forgotten ; it will pay from every point of view. And every member who has anything of scientific or professional value to present at that meeting should notify Secretary Lyman without delay. And it is not too early for the REVIEW to sound its annual slogan :

Get ready for Kansas City !

A SETBACK IN CONNECTICUT.

We regret to state that the recent efforts of the Connecticut Veterinary Medical Association to strengthen the law governing the practice of veterinary medicine in that state resulted in a complete failure. It not only failed to pass, but developed a hard-headed opposition among some of the backwoods representatives, who threatened repeal of the whole statute. It is very evident that there has not been sufficient educational work done among the people generally, and some missionary labors through farmers' institutes and otherwise will be necessary to enlighten the benighted nutmeggers as to the real value of veterinary medicine and its benefits to agriculture and the livestock interests. The profession in that state has done too much good to lose heart or to turn back. Persistency and an abiding faith in the justice of our cause will gradually win recruits and final success.

* * *

INCREASED PAY FOR B. A. I. VETERINARIANS.—The entrance salary for veterinary inspectors in the Bureau of Animal Industry has been increased to \$1,400 per annum, promotion to

\$1,600 to be made after two years' satisfactory service at \$1,400, and promotion to \$1,800 after satisfactory service for four years at \$1,600 per annum. While these figures are not extravagant when the quality of work demanded is taken into consideration, they are a decided improvement over the niggardly compensation which has ruled for a number of years, and we congratulate the profession upon the advantages which this announcement portends.

VETERINARY SCHOOL FOR COLORADO.

The Colorado State Agricultural College, located at Fort Collins, has recently established a complete veterinary course, extending over three years, and requiring a high school graduation for matriculation. This high matriculation requirement is an act of the Board of Control, and is entirely out of the hands of the faculty, and Dean George H. Glover assures us that it will positively be adhered to without exception. The Board of Control have appropriated new buildings and funds to start and maintain a veterinary college that will do credit to the profession—taking for its motto quality rather than quantity.

The facts set forth in the above announcement will be very welcome news to the profession everywhere, and we offer our congratulations to all concerned in this great moral and material uplift to the profession beyond the Mississippi River.

FIRE AT MCGILL UNIVERSITY.—*Montreal, April 16.*—The second disastrous fire within two weeks visited McGill University at an early hour this morning, and practically destroyed the medical building and the museum. The museum had been collecting for three-quarters of a century, and contained many priceless specimens. The medical library was saved. After the disastrous fire which wiped out the engineer building, the university authorities placed a half million dollars of extra insurance on the plant, but it is doubtful whether the insurance will cover one-half of the actual damage. The buildings were erected at a cost of about \$350,000. Dr. F. J. Shepherd said the fire had destroyed his anatomical collection, which was famous throughout America. The insurance was \$250,000 on the medical building and \$100,000 on the contents.—(*New York Press.*)

ORIGINAL ARTICLES.

A SIMPLIFIED METHOD OF DIAGNOSING GLANDERS BY AGGLUTINATION.

BY WALTER E. KING, M. A. AND E. M. HOUGHTON, PH. C., M. D.

Department of Experimental Medicine, Parke, Davis, & Co., Detroit, Mich.

Read before Michigan State Veterinary Medical Association, Feb. 6th, 1907.

The agglutination method for the diagnosis of glanders is used officially in Austria and in Prussia. A careful study of the method has recently been made in this country under the direction of Dr. V. A. Moore, of the New York State Veterinary College, Cornell University, and published reports confirm the results which have already been obtained by European workers. This procedure for the diagnosis of glanders is based upon the phenomenon of agglutination and precipitation. When the blood serum of a horse affected with glanders is brought into contact with certain cultures of either the live or dead germs which are the specific cause of the disease, a "clumping" or formation of flocculent masses of the germs will take place. The glanders germs which, before the addition of glandered horse serum are scattered singly through the liquid, when placed under the influence of glandered serum become so changed that they gradually adhere to one another and form small flakes which are made up of masses of the germs.

These bacteria may be taken from a culture, killed by heating, and placed in suspension in a germicidal or preserving fluid, thus forming an emulsion or suspension of dead glanders germs. To a given amount of this suspension of glanders organisms or "test fluid," given amounts of glandered horse serum are added. Blood serum from an animal affected with glanders causes the dead suspended germs to agglutinate or "clump," and flocculent masses of the dead germs are formed

throughout the suspension fluid. This is called a positive reaction. When the reaction or agglutination is complete the flocculent masses or agglutinated bacteria will have settled to the bottom of the tube.

In employing the agglutination method for diagnosing glanders it must be borne in mind that the blood serum of a normal horse, if used in a low dilution, will cause an agglutination of the glanders germs. Thus the serum of a healthy horse, when added to a suspension of glanders germs in the proportion of one part of the serum to 200 parts of the suspension or diluting fluid, will in many cases cause an agglutination or positive reaction. Experience indicates that normal horse serum very rarely agglutinates when used in the proportion of 1 part serum to 500 parts of suspension fluid.

Moore, Taylor and Giltner, in the *AMERICAN VETERINARY REVIEW*, Oct., 1906, state that "the maximum dilution of normal serum that we found capable of producing agglutina-

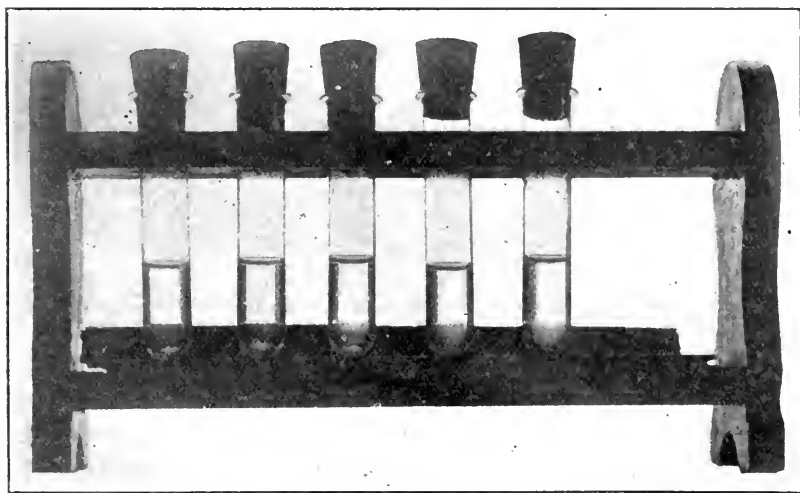


Fig. 1. Showing positive reactions and diagnosis of glanders. Beginning at the left, dilutions in tubes are 1-200, 1-500, 1-800 and 1-1200. Tube at the right end is negative control. Note film of precipitated bacteria in bottom of the four tubes. The fluid in tubes 200 and 500 is completely clear; that in tubes 800 and 1200 slightly cloudy, but not as cloudy as the negative control tube.

tion is 1-500. This is higher than that reported by others. It occurs, however, in but very few cases."

Experience also shows that only the serum from a glandered horse agglutinates in dilutions of 1 part serum to 1200 parts of dilution or suspension, or in higher dilutions. Thus if a sample of serum from a suspected case of glanders gives a positive reaction in a dilution of 1 to 1200 or higher, we may diagnose the case as glanders.

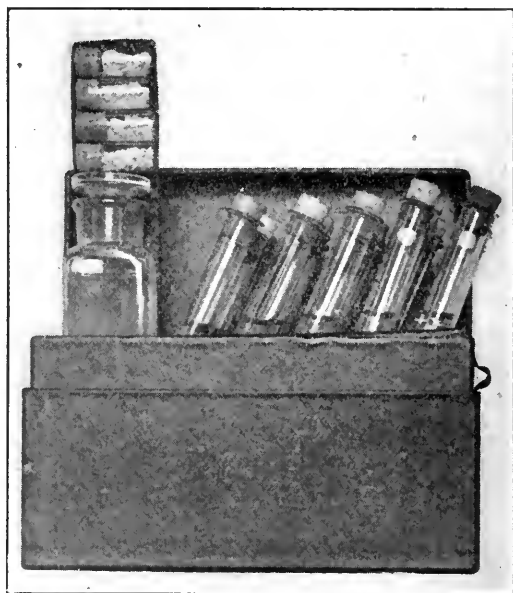


Fig. 2. Glanders Agglutometer. Showing bottle of "test fluid," four sizes of paper discs and twenty tubes, in which tests of five horses are being made.

Schütz and Meissner, in *Archiv für Wissenschaftliche und Praktische Tierheilkunde*, 1905, Bd. 31, p. 353, recommended the following method for the eradication of glanders, based upon agglutination tests: "All horses whose blood agglutinates in dilutions of 1-1000 or higher should be destroyed. The same way, all horses should be destroyed whose blood agglutinates in dilutions of only 1-500 to 1-800 if they show symptoms of glanders. All other horses in which the agglutination is 1-500

to 1-800 should be isolated and destroyed, only when justified by a second test in which the maximum dilution for agglutination is changed; on the other hand, they may be pronounced free from glanders if at the second test it remains unchanged. After establishing glanders, the blood of the horses in the same stable should be tested after three weeks, and this should be repeated until the last two tests show in all horses individually a uniform reaction."

Experimental evidence seems to indicate that the degree of agglutination shows the degree of infection. In other words, that an animal whose serum will agglutinate *Bacterium mallei*, the glanders germ, in a dilution of 1 to 1200, is suffering from a more acute infection of the disease than an animal whose serum will agglutinate in a dilution lower than 1 to 1200.

ADVANTAGES OF THE AGGLUTINATION METHOD.

1. The diagnosis of glanders by the agglutination method is of special value in detecting occult cases of the disease. For example, a horse which shows no symptoms of the disease is under observation. Mallein is injected and a rise of temperature and local swelling develops. There is always a possibility of irritation, infection, local swelling, and consequent rise of temperature from any subcutaneous injection. By the agglutination method the process is so simple that possibilities of mistaken diagnosis are almost eliminated. A small amount of the blood is drawn from the animal, and the serum from this is placed in proper dilutions, with a suspension of dead glanders germs. This serum either agglutinates the bacteria or does not, and the diagnosis is made accordingly.

2. This method can be used in the diagnosis of those suspected cases where there is a rise of temperature and consequently where it is impossible to use Mallein.

3. A few drops of serum from a dead animal may be subjected to this test, thus confirming a diagnosis made before death.

4. Diagnosis by this method can be quickly and conveniently made. The blood may be collected from a number of

animals, and the proper dilutions of the different sera may be placed in the proper amount of suspension fluid in a very short time. The tubes are then put in a warm place and the complete reactions generally occur in about 24 hours.

5. The process of making the test, as directed in this outfit, can be carried out without the least difficulty by any careful veterinarian.

6. The experience of those who have employed this method of diagnosing glanders shows that it is accurate.

Practical Application of the Agglutination Method.—The details of the technique in carrying out a test of suspected glandered serum, as heretofore described, have been such that it could be made only in the laboratory. Even then it is necessary to have ready the "test fluid" or suspension of dead glanders germs, which must be made from a good working culture of the proper age and virulence. Pipettes, diluting fluids and other laboratory equipment must be at hand, all of which involves considerable expense in time and money. It seemed to us that the method was of sufficient importance to the veterinary profession to warrant a careful investigation, in order to find a simple and reliable means of making the reaction more generally useful. As a result of such consideration, we were able to devise an apparatus, which may be called a Glanders Agglutometer, and technique which seems to fully answer the purpose.

The two important features of the modification are the production of (1) a permanent "test fluid" or suspension, and (2) the use of filter-paper discs to collect the serum. We have experimental evidence that a carefully prepared carbolized salt suspension of the dead glanders germs will remain permanent and "stand up" or remain uniformly cloudy indefinitely. It has been shown that a carbolized salt suspension will fully retain its agglutinating properties when brought in contact with glandered serum, when kept at room temperature for six months or longer. Filter-paper discs are used to collect the serum the same as suggested by Dr. Carroll for typhoid fever, and thus all

pipettes and diluting fluids are eliminated. By careful weighing and measuring, filter-paper discs were cut of such a diameter that approximately definite amounts of serum would be taken up when they were saturated with the serum. Thus, a disc cut from a filter-paper of a particular thickness and consistency, having a diameter of 4.6 millimetres, will, when saturated with serum, retain approximately $\frac{3}{500}$ of a cubic centimetre of serum. When care is exercised in using the discs and introducing them into the suspension fluid, the dilution does not vary in accuracy to any greater degree than when pipettes and diluting fluids are used. In fact probably less, as but one operation is required.

The accompanying table gives the comparative results obtained by the use of the discs and diluting fluids in an examination of the blood serum of a total of 58 horses.

APPARATUS NECESSARY TO MAKE THE TEST.

1. Twenty-two test tubes, enough to test five animals at the same time.
2. Two control tubes: a "negative control," containing the suspension fluid to which normal horse serum has previously been added, and a "positive control" to which glandered horse serum has previously been added.
3. Paper discs for collecting the serum.
4. One bottle of "test fluid" or sterile permanent suspension of dead glanders germs. Enough to test five animals.

HOW TO MAKE THE TEST.

1. *Procuring the serum.*—A small amount of blood should be drawn from the jugular vein of the animal to be tested. First clean the part thoroughly with soap and water, and then with 5 per cent. carbolic acid or some germicidal agent. With a trochar, or a needle, puncture the jugular vein and draw a small amount, 10 or 20 centimetres, of blood into a clean vial or wide-mouthed bottle. The date and history of the case should be recorded and sample of blood should be marked. The receptacle for collecting the blood should have a wide mouth so that

TABLE.

No. of Horse.	Results obtained by the use of diluting fluids and pipettes.				Results obtained by the use of the paper discs.				Rise in temp. in degrees. Mallein test.
	Dilutions.				Dilutions.				
	I-200	I-500	I-800	I-1200	I-200	I-500	I-800	I-1200	
1	x	x	x	xc	x	x	x	xc	2 2° 2.4°
2	x	x	x	x	x	x	x	xc	
3	—	—	—	—	—	—	—	—	
4	x	x	x	xc	x	x	x	x	
5	—	—	—	—	—	—	—	—	
6	x	xc	xc	—	x	x	xc	—	
7	x	xc	—	—	x	xc	—	—	
8	x	x	—	—	xc	xc	—	—	
9	x	xc	—	—	x	xc	—	—	
10	xc	—	—	—	xc	—	—	—	
11	xc	—	—	—	—	—	—	—	2 4° 2.4° 2.8° 2.4° 5.° 1.4° 1.6° 4.6°
12	x	—	—	—	xc	xc	—	—	
13	x	—	—	—	x	—	—	—	
14	x	xc	—	—	x	—	—	—	
15	xc	—	—	—	—	—	—	—	
16	xc	—	—	—	xc	—	—	—	
17	x	xc	xc	—	x	xc	xc	—	
18	x	—	—	—	x	—	—	—	
19	x	x	x	x	x	x	x	x	
20	x	xc	—	—	x	xc	—	—	
21	x	xc	xc	—	x	xc	xc	—	2 4° 2.4° 2.8° 2.4° 5.° 1.4° 1.6° 4.6°
22	x	x	—	—	x	x	—	—	
23	x	x	x	x	x	x	x	xc	
24	xc	xc	xc	—	xc	xc	—	—	
25	x	x	xc	xc	x	x	xc	xc	
26	x	xc	xc	—	x	xc	xc	xc	
27	x	xc	—	—	xc	xc	—	—	
28	xc	xc	—	—	xc	xc	—	—	
29	x	x	xc	—	xc	xc	—	—	
30	x	x	xc	xc	x	x	xc	xc	
31	x	xc	xc	—	x	xc	xc	—	2.8° 3.° 1.8° 2.° 2.° 3.6° 2.° 4.° 1.4° 4.4° 2.6° 2.° 3 8°
32	x	x	xc	xc	x	x	x	x	
33	x	x	xc	xc	x	x	xc	xc	
34	x	xc	—	—	x	xc	—	—	
35	x	—	—	—	x	—	—	—	
36	xc	—	—	—	xc	—	—	—	
37	x	xc	xc	—	xc	xc	xc	—	
38	x	x	—	—	x	x	x	—	
39	x	x	x	—	x	x	x	—	
40	x	x	x	x	x	x	x	x	
41	x	x	x	x	x	x	x	x	4.4° 2.6° 2.° 3 8°
42	x	x	xc	—	x	x	xc	—	
43	x	x	xc	—	x	x	xc	—	
44	x	x	xc	xc	x	x	xc	—	
45	xc	xc	—	—	xc	xc	—	—	
46	x	xc	xc	—	x	xc	xc	—	
47	x	x	x	x	x	x	x	x	
48	x	x	x	xc	x	x	x	xc	
49	—	—	—	—	—	—	—	—	
50	—	—	—	—	—	—	—	—	
51	x	xc	—	—	x	xc	—	—	
52	—	—	—	—	—	—	—	—	
53	xc	—	—	—	xc	—	—	—	
54	x	—	—	—	x	—	—	—	
55	x	x	x	xc	x	x	x	xc	
56	xc	—	—	—	xc	—	—	—	
57	x	xc	xc	—	x	xc	xc	—	
58	xc	—	—	—	xc	—	—	—	

NOTE: x indicates a positive reaction, the supernatant fluid being completely clear.
 xc indicates a positive reaction, the supernatant fluid being somewhat cloudy.
 — indicates the absence of any reaction.

the paper discs can be placed in the serum for saturation and removed without difficulty. Allow the bottle containing the blood to stand for a few minutes until the blood clots and the serum separates.

2. *Distributing the suspension.*—Shake well the bottle containing the “test fluid” or suspension of dead glanders germs, and pour from this bottle into one each of the tubes labeled 200, 500, 800, 1200, enough of the “test fluid” to fill the tube just to the mark. This mark graduates the tube so that it contains 3 cubic centimetres of the test fluid when filled just up to the mark of graduation. *Care should be used to place exactly 3 cubic centimetres of the fluid in each tube.*

• *Making the test.*—The paper discs are of four sizes. The first or largest size discs are each 7.4 millimetres in diameter, and retain approximately $3/200$ of a cubic centimetre of serum. The second, third and fourth, or smaller size discs, are 4.6, 3.7 and 3 millimetres in diameter, and retain approximately $3/500$, $3/800$ and $1/400$ cubic centimetres of serum respectively.

After the serum has separated sufficiently from the clotted blood, introduce one of the largest size discs, labeled No. 1, into the serum, and when it is saturated drop the disc into the test tube labeled 200. This gives a serum dilution of approximately 1 part of serum to 200 parts of dilution or “test fluid.” *The disc should be saturated, not by submerging in the serum, but by holding it so that the edge touches the surface of the serum long enough for the disc to be thoroughly saturated.* By pressing the point of any sharp-pointed instrument into a paper disc it can be handled readily. The discs should be saturated with the serum without touching the sides of the bottle or test tube, and without being loosened from the sharp-pointed instrument. An extra long pin or darning needle will do.

Observing the same precaution as with the first disc, saturate one each of the second, third and fourth, or smallest size discs, with the serum, and drop them into the tubes labeled 500, 800, and 1,200 respectively. This gives serum dilutions of 1 to 500, 1 to 800, and 1 to 1200. Care should be taken to get the

disc thoroughly saturated with the serum and not to touch the sides of the bottle or tube with the saturated disc, because the disc should carry the serum to full saturation in order to make the proper dilution to the 3 cubic centimetres of test fluid. At the same time, care should be exercised not to allow even a very small drop of serum to cling to the paper disc. The disc should be only thoroughly saturated, *and no more or no less serum should be introduced into the tube of suspension fluid.*

One should also make sure that no serum clings to the pin or sharp-pointed instrument, because in that case more would be added, and therefore the test would be incorrect. As has been stated, normal horse serum will agglutinate the glanders germs in the suspension, if enough of the normal serum be added to the suspension. Normal serum frequently reacts in a dilution of 1 to 200 and sometimes in a dilution as high as 1 to 500. Therefore it is clearly apparent that the greatest care should be exercised in collecting the serum and introducing it into the suspensions. Be sure that the right size discs are placed into their respective tubes exactly as directed. *Do not allow these discs to get spilled and mixed up.* If they should by accident become mixed, use the greatest care in sorting out the four different sizes and placing each size in separate vials.

After saturating the discs with the serum and introducing them into the test tubes, cork them, and after shaking each tube, put them in a warm place. In the laboratory the tubes are placed in an incubator which maintains a temperature of 37° C., 98° F., or about body temperature. An incubator, however, is not necessary, but it is important that they should be put in some warm place, the temperature of which is not far from 37° C., or body temperature. They may be placed behind a kitchen stove or radiator, or wherever a fairly uniform temperature can be conveniently maintained.

After the saturated discs have remained in the four tubes of suspension long enough for the serum to be disseminated through the fluid (a few minutes), tip the tube upside down and

then slowly turn the tube right end up, and allow the disc to stick to the cork or side of the tube. This removes the disc from the fluid and allows the characteristic film of agglutinated bacteria, in case of a positive reaction, to be easily seen in the bottom of the tube.

Making a test of a number of cases at the same time.—The above directions are given for making the test of a single case. A number of animals may be conveniently tested at the same time. In each outfit there are a sufficient number of tubes to test five animals simultaneously. After procuring the samples of serum, five or more cases may be tested almost as quickly as one case. Each of the five rows of tubes in the outfit are placed opposite the numerals, I., II., III., IV. and V. When testing several animals at the same time, it is convenient to indicate each case in the notes or records by the numerals, thus making sure that one will not get the different cases under observation confused. For instance, Case I., bay mare; Case II., gray gelding, etc. In testing a number of horses at the same time one important point must be observed, viz. : *do not allow one sample of serum to be contaminated by another.* In other words, suppose fifteen horses are being tested at the same time and horse one is a glandered horse, while horse five is a healthy horse. Now, if in any manner, a small amount of serum from horse one is placed in the four tubes used in testing the serum from horse five, then that small amount of glandered serum from horse one would cause the bacteria to agglutinate in those tubes. There would then be a positive reaction in the test of the serum from the normal horse, and the case would be diagnosed as glanders and the animal condemned. A very small amount of serum from a severe case of glanders will cause an agglutination of the glanders organisms. Not infrequently one part of glandered serum to from 3,000 to 8,000 parts of dilution will give a positive reaction. Therefore, the importance of exercising the greatest care in this particular is clearly evident. *When collecting the blood from a number of horses, wash the trochar, or needle, and the hands in some germicidal fluid after each opera-*

tion. In saturating the discs with the serum, carefully wash and wipe the pin or sharp-pointed instrument used in picking up the discs after preparing the four tubes for each case. If a pin is used in picking up the discs, as an extra precaution, use a different pin with each sample of serum. *Do not allow the least bit of serum from one animal to come into contact with the serum of any other animal, or with the suspension fluid in any tubes used for testing any other animal.*

Time necessary for reaction to take place.—The agglutination may begin in six or eight hours after the tubes have been put in a warm place. The reaction may be complete at the end of 24 hours. Unless all the reactions are complete after standing 24 hours, the tubes should be re-examined at the end of 48 hours, as reactions may occur after 24 hours.

The reaction will generally take place in 24 hours. After the reaction is complete, further standing produces no changes in the suspension fluid.

The reaction.—When the reaction is positive, the dead glanders germs agglutinate, forming flocculent masses of bacteria throughout the tube of suspension fluid. These flocculent masses gradually settle to the bottom of the tube. The positive reaction, therefore, consists of a layer of the agglutinated and precipitated bacteria, covering the entire concavity at the bottom of the tube. This film-like sediment may become so dense that it rolls in at the sides. The fluid in the tube generally becomes clear in the lower dilutions. In the higher dilutions the fluid may be slightly cloudy at the end of the reaction, showing that all the bacteria have not become agglutinated. If a clearly visible, film-like, flocculent layer of bacteria covers the bottom of the tube, the reaction is to be regarded as positive, whether the supernatant fluid has become completely clear or not. Do not shake the tubes at any time while the reaction is taking place, as this may interfere with a complete reaction. An examination of the tube labeled "Positive Control," to which glandered serum in a dilution of 1 to 1200 has been added, will indicate the appearance of a positive reaction. *Always compare with the*

two control tubes labeled "Positive Control" and "Negative Control."

In making an examination of the tubes, face a well-lighted window and incline the tube toward the window at such an angle that the greater part of the bottom of the tube is visible. Now hold the small box containing the paper discs against the tube, between it and the window, thus forming a black background. Turn the tube around slowly and the film-like flocculent layer of agglutinated bacteria in the bottom of the tube will be clearly apparent when a positive reaction is present. In the lower dilutions (1-200 and 1-500) the fluid in the tube will generally be completely clear, all of the bacteria having agglutinated and settled at the bottom of the tube. Sometimes the fluid may be somewhat cloudy in the higher dilutions (1-800 and 1-1200), but if a clearly evident film of agglutinated bacteria is present in the tube, the reaction is to be regarded as positive. If the reaction is positive, however, the supernatant fluid will always be less cloudy than that of the negative tube.

A negative result is indicated by a uniform cloudiness of the suspension fluid, no change having taken place after the addition of the saturated discs. There will be a small round spot of sediment in the centre of the concavity at the bottom of the tube. The tubes giving negative results will appear exactly like the tube labeled "Negative Control," as to the degree of cloudiness and amount of sediment that may be present.

DIAGNOSIS.

1. Negative results in all four tubes show that glanders is not present.

2. When a positive reaction occurs in tube labeled 200 (1 part serum to 200 parts diluting fluid), with negative results in all of the other three tubes, a diagnosis of glanders is not indicated.

3. If a positive reaction occurs in the absence of symptoms of glanders in the animal, in tubes labeled 200 and 500, and no sign of a positive reaction occurs in tubes labeled 800 and 1200, the case should be considered as suspicious and the animal

should be retested in from a few days to three weeks later. If, on being retested, a positive reaction is shown in tube labeled 800 or higher, the case should be diagnosed as glanders. If the second test gives the same results as the first, viz.: positive reactions only at 200 and 500, the animal should be regarded as free from glanders.

4. If a positive reaction occurs in tubes labeled 200, 500 and 800, and no sign of a reaction occurs in tube labeled 1200, while there are no symptoms of glanders after careful examination and no history of glanders, the case should be regarded as very suspicious. The animal should be closely watched and should be retested not later than one week after the first test. If a stronger reaction occurs, or a positive reaction takes place in tube labeled 1200, the case should be given a positive diagnosis at once. A reaction similar to that obtained at the first test (a positive reaction in tubes 200, 500, and 800) indicates that the animal is free from the disease.

5. If, in the absence of symptoms, a positive reaction occurs in all four tubes, the case should be diagnosed at once as glanders.

6. Positive reactions in any of the tubes higher than tube labeled 200, when symptoms of glanders are present, indicate that the animal is glandered and should be destroyed.

7. If the animal shows marked symptoms of the disease, positive reactions will in all probability occur in all four tubes.

8. In addition to the determination of a negative, a suspicious or a positive case of glanders, the degree of infection may possibly be revealed by the reaction being either tardy or prompt, weak or strong.

ACCORDING to a special dispatch to the *New York Sun*, "The worship of dogs and cats by the members of English society has evolved a new profession for women. Two guineas a week, with residence and board, can be earned by nurses skilled in the care of sick animals. There is a training school for such nurses in London, where certificates are granted to apt pupils after six months' experience, and those holding them do not seem to experience any difficulty in obtaining occupation."

NEUROTOMY IN THE HORSE.

BY DR. THEODOR SCHMIDT,

First Assistant of the Surgical Clinic of the Royal Veterinary High School in Vienna.

TRANSLATED FOR THE REVIEW BY DR. A. T. PETERS,

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POSTERIOR EXTREMITIES

No.	Description.	Diagnosis.	Pre Treatment.	Day of Operation.	Nerve Operated on.	Subsequent History.
1	Gelding 8 years old. Heavy draught horse.	Spavin on right leg. Very lame.	Cauterized and blistered. Treated for one year.	Dec. 8, 1898.	Right deep tibial and peroneal with result.	Good service for 3 years then sold and lost sight of.
2	Mare. 8 years old Light driver.	Spavin in right leg, large exostosis. Lame for one year.	Blistered.	Feb. 5, 1899.	Right deep tibial and peroneal with result.	After 2 months' good service, animal was used to make a long trip, after which appeared a large swelling at the hock joint. Antimal lame, lameness soon disappeared, sold and lost sight of.
3	Gelding of 10 years. Heavy draught horse.	Lame for two months in right hind leg.	Blistered.	Dec., 1898.	Right deep tibial and peroneal with result.	March 14, 1899, rupture of the flexor tendon of the coffin bone at the height of the sesamoid bones during severe work. Post mortem: Tendon fibrillated, tendon sheath thickened, nodular lime deposits in the tendon and tendon sheath wall.
4	Gelding of 12 years. Light draught horse.	Right spavin plainly visible.	Blistered.	March 5, 1899	Tibial nerve alone with result.	Sold. In summer of 1904 still in use.

No.	Description.	Diagnosis.	Pre Treatment.	Day of Operation.	Nerve Operated on.	Subsequent History.
5	Gelding. 12 years old. Heavy draught horse.	Spavin of right leg	?	March 12, 1899.	Tibial nerve. Operation performed from the lateral surface. Lameness improved.	Used in this way for two years. Then?
6	Mare 7 years old. Heavy draught horse.	Lane in left hind foot, no visible spavin	?	March 19, 1899.	Left tibial nerve.	Good service. Interfering gait. In Oct., 1903, sloughing of hoof from bad shoeing.
7	Gelding. 8 years old. Light driver.	Left spavin.	Cauterized.	March 21, 1899.	Tibial nerve alone. No result.	Sold.
8	Gelding. 12 years old. Heavy draught horse.	Left spavin? Very lame.	Puncture fired on the spavin without result.	March 23, 1899.	Tibial nerve. Lameness disappeared.	Sept. 4, 1899, complete rupture of the flexor tendon of the coffin bone at the height of the sesamoid bones, and laceration of the intersesamoid ligaments with the separation of the sesamoids.
9	Stallion. 10 years old. Heavy draught horse.	Chronic metastatic inflammation of tendons and tendon sheaths of right hind fetlock after distemper.	Treated six months without success.	May 27, 1899.	Tibial nerve.	Phlegmon of the tendon sheath and suppuration. Destroyed Apr. 3, 1899.
10	Gelding. 8 years old. Heavy draught horse.	Sidebone on the left hock joint.	Puncture fired.	March 30, 1899.	Tibial nerve without result.	Sold lame and in service two years.
11	Mare. 8 years old. Light driver.	Right spavin.	?	May 14, 1899.	Tibial and deep peroneal nerves with result. After itching the suture tore out over the place of operation on the peroneal, granulations appeared, retarding healing for five weeks.	From time to time severe itching was noticed in the scar of the peroneal nerve, horse trying to bite this. Used two years, then sold.

No.	Description.	Diagnosis.	Pre Treatment.	Day of Operation.	Nerve Operated on.	Subsequent History.
12	Stallion. 6 years old. Heavy draught horse.	Enlargement of right hand os sufraginis. Lameness for several months.	... ..	April 1, 1899.	Tibial nerve with result.	Serviceable two years, then sold.
13	Gelding. 7 years old. Light driver.	Spavin on left leg.	Puncture fired.	April 17, 1899. April 25, 1899.	1. Tibial nerve alone. No real change. 2. Peroneus profundus (deep peroneal) with permanent result.	Noticeable growth of spavin. Served two years, then sold.
14	Mare. 8 years old. Russian trotter.	Spavin of right leg. Very lame.	.....	April 28, 1899. May 19, 1899.	1. Tibial nerve without result. 2. Deep peroneal nerve with result.	Excessive granulations appeared at point of operation on peroneal, necessitating several treatments with copper sulphate. thermo-cautery, etc., which retarded healing process for weeks. Dec, 1904, still in service
15	Mare. 12 years old. Heavy draught horse.	Considerable lameness for 6 mos. on right hind leg. Impossible to bear weight on fetlock. Diagnosis?	.....	May 3, 1899.	Tibial nerve, permanent result.	
16	Mare. 6 years old. Light driver.	Spavin of right leg. Very lame.	.....	May 9, 1899.	Tibial and deep peroneal nerve with result.	?
17	Mare. 8 years old. Light driver.	1. Spavin of left leg. 2. Spavin of right leg.	Repeatedly cauterized and blistered. Cauterized and blistered repeatedly.	May 16, 1899. July 16, 1899.	1. Left tibial and deep peroneal. 2. Right tibial and deep peroneal nerve.	Animal became very wide gaited behind, swing limbs outward in a circle or arch. The left spavin became very much enlarged. In Jan., 1900, very lame on left side, coming on suddenly. Another resection of left tibial and deep peroneal without result. Examination revealed fracture of the rarefied os cuneiforme tertium in the frontal plane.

<i>No.</i>	<i>Description.</i>	<i>Diagnosis.</i>	<i>Pre Treatment.</i>	<i>Day of Operation.</i>	<i>Nerve Operated on.</i>	<i>Subsequent History.</i>
18	Gelding. 8 years old. Driver.	Spavin of right leg.	Puncture fired twice without result.	May 30, 1899.	1. Deep peroneal without result. 2. Tibial nerve with result.	Remarkable growth of the spavin. Sold in 1902 on account of reappearing lameness.
19	Mare. 6 years old. Russian trotter.	Spavin of left leg.	.....	June 9, 1899.	Tibial and peroneal nerve with result.	After 6 months again suddenly lame, no growth of the spavin node, after several weeks' rest again all right.
20	Gelding. 6 years old. Heavy draught horse.	Spavin of right leg.	.....	June 13, 1899.	Tibial and peroneal nerve with result.	Considerable growth of the spavin node, so that in consequence of ankylosis, a stiff gait resulted.
21	Gelding. 8 years old. Heavy draught horse.	Sidebone on the right hock.	.....	June 21, 1899.	Tibial and peroneal nerve with result.	Interfering gait, normal hoof 1901 sloughing of the hoof (no details known).
22	Stallion. 7 years old. Heavy draught horse.	Spavin of left leg.	Cauterized.	June 26, 1899.	Tibial and peroneal nerve with result.	Growth of spavin node. Good service up to 1903.
23	Gelding. 6 years old. Heavy draught horse.	Spavin of right leg.	Blistered.	July 6, 1899.	Tibial and peroneal nerve with permanent result.	Nov., 1904, still in service. Hyperaesthesia in the foot operated on. Node about the size of a hazelnut to be felt at the upper angle of the tibial scar below the fascia, light pressure on this causing great pain (Neuroma?).
24	Mare. 12 years old. Russian trotter.	Spavin of right leg.	Puncture fired. Blistered.	July 8, 1899.	Tibial and peroneal nerve with result.	Rapid growth of spavin node so that a tumor as large as a fist is present on the inner surface of the hock, without producing lameness. Sold after one year.
25	Gelding. 13 years old. Light driver.	Spavin of right leg. Very lame.	?	July 11, 1899.	Tibial and peroneal nerve with result.	?

No.	Description.	Diagnosis.	Pre Treatment.	Day of Operation.	Nerve Operated on.	Subsequent History.
26	Mare. 8 years old. Driver.	Spavin of left leg. Very lame.	Puncture fired twice.	July 13, 1899.	Tibial and peroneal nerve with result.	In service one year, then sold.
27	Stallion. 18 years old. Trotter.	Ringbone of left hind foot. Moderate lameness.	Puncture fired twice.	July 13, 1899.	Tibial nerve with result.	Destroyed after 6 months on account of another injury.
28	Gelding. 9 years old. Heavy draught horse.	Sidebone of right hind fetlock joint surrounding it like a ring. Very lame for two months.	Blistered twice.	July 17, 1899.	Tibial nerve with result	Dec., 1904, still in service. The sidebone-like thickening around the fetlock joint was gradually but completely absorbed.
29	Gelding. 14 years old. Heavy draught horse.	Spavin of left leg (large node), could not easily bear weight on fetlock, vertical hoof	.....	July 19, 1899.	Tibial and peroneal nerve with result.	In 1900, during an attack of influenza, great oedematous swelling in the extremity operated on, especially in the operation scar.
30	Gelding. 7 years. Light draught horse.	Spavin of right leg.	.....	July 21, 1899.	Tibial and peroneal nerve with result.	Still in service in summer of 1904. Growth of the spavin node.
31	Mare. 5 years old. Driver.	Spavin of right leg.	.....	July 25, 1899.	Tibial and peroneal nerve with result.	Sold after 6 months (?).
32	Mare. 10 years old. Wagon horse.	Spavin of left leg.	Blistered.	July 28, 1899.	Tibial and peroneal nerve with result.	After 4 months' good work, with forced service, sudden lameness appeared and great swelling at hock joint. Anatomical examination could not be made.
33	Mare. 7 years old. Driver.	Spavin of right leg.	Blistered.	Aug. 5, 1899.	Tibial and peroneal nerve with result.	After six months, jerk-foot appeared, in spite of this gave good service as a trotter, later?
34	Mare. 7 years. Light draught horse.	Spavin of left leg.	Blistered.	Aug. 12, 1899.	Tibial and peroneal nerve with result.	1902, large gall of hock joint. Still in service in Dec., 1904.

No.	Description	Diagnosis.	Pre Treatment.	Day of Operation.	Nerve Operated on.	Subsequent History.
35	Mare. 6 years. Light draught horse.	Spavin of left leg.	Blistered.	Aug. 21, 1899.	Tibial and peroneal nerve with result. No lameness.	?
36	Mare. 8 years old. Driver.	Spavin on both sides.	Blistered.	Aug. 22, 1899.	Tibial and peroneal nerve on both sides.	Sold after two years.
37	Gelding. 14 years old. Hungarian driver.	Spavin of right leg.	Cauterized and blistered.	Aug. 23, 1899.	Right tibial and peroneal nerve with result.	Good service for one year as cab horse, then?
38	Gelding. 12 years old. Russian trotter.	Spavin of left leg.	Cauterized and blistered.	Aug. 26, 1899.	Tibial and peroneal nerve with result. Healing by second intention with much suppuration.	In service about one year as cab horse, then?
39	Gelding. 8 years. Heavy draught horse.	Spavin of right leg.	Cauterized and blistered.	Aug. 29, 1899.	Right tibial and peroneal nerve with result. Discharged Sept 8.	One and a half year's service, later?
40	Gelding. 8 years old. Driver.	Spavin of right leg.	Cauterized and blistered.	Sept. 20, 1899.	Tibial and peroneal nerve with result.	Served two years, large spavin node, suddenly lame again, destroyed.
41	Stallion. 10 years old. Russian trotter.	Spavin of right leg.	Cauterized and blistered.	Oct. 3, 1899.	Tibial and peroneal nerve with result.	?
42	Gelding. 9 years old. Heavy draught horse.	Looseness and atony of the ligaments in the left hind fetlock joint, producing knocking.	Blistered.	Oct. 9, 1899.	Tibial and peroneal nerve. Improvement of the condition.	After 2 months, rupture of the flexor tendon of the coffin bone at the height of the sesamoid bones.
43	Gelding. 9 years old. Driver.	Spavin of right leg.	Blistered.	Oct. 16, 1899.	Tibial and peroneal nerve with result.	Great growth of the spavin node. After one year again lame, then gradual improvement.
44	Gelding. 10 years old. Driver.	Spavin of left leg.	Puncture fired and blistered.	Oct. 17, 1899.	Tibial and peroneal nerve with result.	?

No.	Description.	Diagnosis.	Pre Treatment.	Day of Operation.	Nerve Operated on.	Subsequent History.
45	Gelding. 7 years old.	Spavin of left leg.	Puncture fired and blistered.	Oct. 19, 1899.	Tibial and peroneal nerve with result.	Still in service in summer of 1904.
46	Gelding. 8 years. Light draught horse.	Spavin of right leg. Lameness when bought.	.....	Oct. 23, 1899.	Tibial and peroneal nerve with result.	Still in service in summer of 1904 in the field.
47	Gelding. 10 yrs. Light draught horse.	Spavin of left leg.	.....	Oct. 24, 1899.	Tibial and peroneal nerve with result.	Still in service in summer of 1904 in the field.
48	Gelding. 4½ years old. Light wagon horse.	Spavin of left leg Bought lame.	.....	Nov. 1, 1899.	Left tibial and peroneal nerve with result.	Feb., 1904, suddenly lame without known cause. Lymphangitis and suppurative lymphadenitis in groin. Sloughing of the hoof after 4 days.
49	Gelding. 10 years old. Heavy draught horse	Spavin of left leg.	.....	Oct. 30, 1899.	Left tibial and peroneal nerve with result.	After two months' good service the horse caught his foot in the street car track. Fracture of coffin bone, sloughing of hoof.
50	Gelding. 12 years old. Light draught horse.	Spavin of left leg. Distinct spavin node. Lameness does not correspond to the spavin. (?) Lameness for one year.	.....	Nov. 8, 1899.	Tibial and peroneal nerve Improved when discharged.	After a short time lameness as before the operation.
51	Gelding. 8 years old. Hungarian driver.	Spavin of right leg (?)	Blistered three times.	Nov. 9, 1899.	Tibial and peroneal nerve with result.	Dec., 1899, distortion in the fetlock. March, 1900, oblique fracture of the os suifraginis in the extremity operated on.
52	Mare. 12 years old. Driver.	Spavin of left leg.	.....	Nov. 11, 1899.	Tibial and peroneal nerve with result.	Reported again lame.
53	Gelding. 9 years old. Driver.	Spavin of left leg.	Cauterized and blistered.	Nov. 13, 1899.	Tibial and peroneal nerve with result.	Still in service in summer of 1904.

No.	Description.	Diagnosis.	Pre Treatment.	Day of Operation.	Nerve Operated on.	Subsequent History.
54	Mare 8 years old. Hungarian driver.	Spavin of right leg.	Cauterized and blistered.	Nov. 20, 1899.	Tibial and peroneal nerve with result.	After two months considerable formation of a sidebone on the hock joint. Lameness.
55	Stallion. 7 years old. Russian driver.	Spavin of left leg.	Cauterized and blistered.	Nov. 24, 1899.	Tibial and peroneal nerve with result.	After 9 months, sidebone formation on the hock joint, again lame, destroyed.
56	Gelding, 8 years. Heavy draught horse.	Spavin of left leg. Very lame.	Cauterized and blistered.	Nov. 29, 1899.	Tibial and peroneal nerve with result.	Sidebone formation, service possible. In summer of 1904 still useful.
57	Stallion, 6 years. Heavy draught horse.	Spavin of left leg.	.....	Dec. 11, 1899.	Tibial and peroneal nerve with result.	?
58	Mare. 10 years old. Driver.	Spavin of right leg.	Blistered.	Dec. 28, 1899.	Tibial and peroneal nerve with result.	March, 1900, oblique fracture of the os suffraginis (caught in street car track).
59	Gelding, 7 years. Heavy draught horse.	Spavin of left leg.	.....	Jan. 8, 1900.	Tibial and peroneal nerve with result.	Spavin node somewhat larger. Still in service in Dec., 1904.
60	Gelding. 13 years old. Heavy draught horse.	Spavin of right leg. Contracted hoof to the slightest degree on both hind feet.	.....	Jan. 16, 1900.	Tibial and peroneal nerve with result.	17 days after the operation after getting caught (?) in the street car track, perforation of the sole through the coffin bone. Destroyed.
61	Mare. 8 years old. Driver.	1. Spavin of right leg. 2. Spavin of left leg.	.....	Jan., 1900. March, 1900.	Tibial and peroneal nerve. Primary healing on both sides.	For 1½ years horse gave entirely satisfactory service to my colleague Starzinger and myself. Then suddenly very lame, formation of a large sidebone on the left hock joint. Destroyed. Oblique fracture of the greatly rarefied os naviculare (of man), (os centrale), os cuneiforme III.
62	Gelding. 16 years old. Pony.	Spavin of left leg.	.....	Jan. 25, 1900.	Tibial and peroneal nerve. Straight when discharged.	Reported again lame. Sold.

No.	Description.	Diagnosis.	Pre Treatment.	Day of Operation.	Nerve Operated on.	Subsequent History.
63	Gelding. 15 yrs. Heavy draught horse.	Spavin of left leg. Wind gall.	Blistered.	Jan. 26, 1900.	Tibial and peroneal nerve. Straight when discharged.	?
64	Mare. 12 years old. Driver.	Ringbone of right hind foot. Wind gall.	Blistered and puncture fired.	Jan. 27, 1900.	Tibial and peroneal nerve. Straight when discharged.	June, 1903, rupture of the flexor tendon of the coffin bone at the height of the sesamoid bones.
65	Gelding. 9 years Heavy draught horse.	Spavin of right leg.	.....	Feb. 5, 1900.	Tibial and peroneal nerve. Straight when discharged.	1902, contusion of hock joint. Sold.
66	Mare. 12 years old. Driver.	Sidebone on the right hind fetlock joint. So-called hard gall (wind gall) on the same.	Cauterized.	Feb. 8, 1900.	Tibial and peroneal nerve. Straight when discharged.	In summer of 1902, rupture of the flexor tendon of the coffin bone at the height of the sesamoid bones.
67	Mare. 8 years. Light draught horse.	Spavin of left leg.	.....	Feb. 16, 1900.	Tibial and peroneal nerve. Straight when discharged.	Winter of 1903 sold for want of further use. Good service the entire period.
68	Gelding. 5 years Light draught horse.	Spavin of right leg.	.....	Feb. 17, 1900.	Tibial and peroneal nerve. Straight when discharged.	Fracture of the coffin bone after 3 weeks. Sloughing of the hoof in 3 days. Cause not known.
69	Gelding. 8 years. Heavy draught horse.	Spavin of right leg.	.....	Feb. 27, 1900.	Tibial and peroneal nerve. Straight when discharged.	After three years of good service sold for want of further use.
70	Gelding. 10 years old. Draught horse.	Spavin of left leg.	.....	March 24, 1900.	Tibial and peroneal nerve. Straight when discharged.	?
71	Stallion. 15 years old. Heavy draught horse.	High degree of lameness in left hind leg for six months.	.....	March 28, 1900.	A trial case. Tibial and peroneal nerve without result.	Immediate destruction. Anatomical examination impossible.
72	Gelding. 14 years old. Driver.	Spavin of right leg.	.....	March 19, 1900.	Tibial and peroneal nerve with result.	In service 2 years. Growth of the spavin node. Sold on account of age and emaciation.

No.	Description.	Diagnosis.	Pre Treatment.	Day of Operation.	Nerve Operated on.	Subsequent History.
73	Mare. 4½ years old. Driver.	Spavin of right leg.	.....	May 14, 1900.	Tibial and peroneal nerve with result.	?
74	Gelding. 12 yrs. Heavy draught horse.	Spavin of left leg.	.....	May 5, 1900.	Tibial and peroneal nerve with result.	?
75	Mare 18 years. American trotter.	Ringbone of left leg.	.....	May 9, 1900.	Tibial nerve with result.	Sold after 4 months.
76	Gelding. 12 years old. Draught horse.	Spavin of left leg. Ringbone.	.....	May 18, 1900.	Tibial and peroneal nerve with result.	?
77	Gelding. 6 years old. Heavy draught horse.	Thickening of the inferior sesamoid ligament of the left hind leg. Very lame.	.....	May 29, 1900.	Tibial and peroneal nerve with result.	Still in service in autumn of 1904.
78	Gelding. 7 years. Heavy draught horse.	Spavin of left leg.	.....	July 3, 1900.	Tibial and peroneal nerve with result.	In 1902 died with colic.
79	Gelding. 12 years old. Driver.	Spavin of left leg.	.....	July 16, 1900.	Tibial and peroneal nerve with result.	?
80	Gelding. 6 years. Light draught horse.	Spavin of left leg.	.....	July 18, 1900.	Tibial and peroneal nerve with result.	?
81	Gelding 10 yrs. Heavy draught horse.	Spavin of left leg.	.....	July 19, 1900.	Tibial and peroneal nerve with result.	?
82	Mare. 7 years Heavy draught horse.	Spavin of right leg.	.....	July 27, 1900.	Tibial and peroneal nerve with result.	In 1903 fracture of the femur while working in a quarry.

No.	Description.	Diagnosis.	Pre Treatment.	Day of Operation.	Nerve Operated on.	Subsequent History.
83	Stallion. 14 years old. Russian Driver.	Spavin of right leg?	Cauterized and blistered.	Oct. 4, 1900.	Tibial and peroneal nerve with result.	After four weeks again lame. In further service in spite of slight lameness.
84	Gelding. Driver.	Spavin of left leg.	.....	Aug. 18, 1900.	Tibial and peroneal nerve with result.	?
85	Gelding. 6 years old. Driver.	Spavin of left leg.	.....	Aug. 29, 1900.	Tibial and peroneal nerve with result.	Sloughing of the hoof after one year.
86	Mare 8 years. Light draught horse.	Spavin of left leg.	Cauterized	Sept. 25, 1900.	Tibial and peroneal nerve with result.	After one year again lame. Sold in 1903.
87	Gelding. 9 years old Heavy draught horse.	Spavin of left leg. Windgall.	.....	Nov. 7, 1900.	Tibial and peroneal nerve with result.	After two years, rupture of the flexor tendon of the coffin bone at the height of the sesamoid bones.
88	Gelding. 14 yrs. Heavy draught horse.	Spavin of left leg.	.....	Dec. 9, 1900.	Tibial and peroneal nerve with result.	Sold after six months.
89	Mare. 8 years old. Driver.	Spavin of right leg. Lame one year.	.....	Jan., 1901.	Tibial and peroneal nerve with result.	Again lame after two months. Side bone formation on the hock joint. Destroyed after one year on account of this.
90	Mare. 7 years old. Driver.	Spavin of right leg. Lame one year.	Cauterized.	Jan. 1, 1901.	Tibial and peroneal nerve with result.	Sold. Still in service in spring of 1904.
91	Gelding. 5 yrs. Light draught horse	Spavin of left leg.	.....	Jan. 18, 1901.	Tibial and peroneal nerve with result.	Still in service in autumn of 1904.
92	Stallion. 16 years old. Heavy draught horse.	Spavin of left leg. Lame for two years.	.....	Jan. 29, 1901.	Tibial and peroneal nerve with result.	After 2 months, enormous solid swelling of the hock joint. Similar findings as in the cases with oblique fracture of the os navicular. Destroyed.

No.	Description.	Diagnosis.	Pre Treatment.	Day of Operation.	Nerve Operated on.	Subsequent History.
93	Mare. 15 years old. Russian Driver.	Spavin of right leg.	.....	Jan., 1901.	Tibial and peroneal nerve with result.	Still in service in the summer of 1904. Very fast horse.
94	Mare. 14 years. Heavy draught horse.	Spavin of left leg.	.....	Jan., 1901.	Tibial and peroneal nerve with result.	Sold. Said to be still in service of new owner.
95	Gelding. 6 years. Light draught horse.	Spavin of right leg.	.....	Feb. 10, 1901.	Tibial and peroneal nerve with result.	Sold. Said to be still in service of new owner.
96	Gelding. 4½ yrs. Heavy draught horse.	Spavin of left leg.	.....	Feb. 10, 1901.	Tibial and peroneal nerve with result.	?
97	Gelding. 14 yrs Heavy draught horse.	Spavin of left leg.	Cauterized.	March 25, 1901.	Tibial and peroneal nerve with result.	Dec., 1904, still in service.
98	Mare. 6 years Light draught horse.	Spavin of left leg.	.....	March 28, 1901.	Tibial and peroneal nerve with result.	Sold.
99	Gelding. 12 years old. Light draught horse.	Spavin of right leg.	.....	April 24, 1901.	Tibial and peroneal nerve with result.	After 6 months, rupture of the flexor tendon of the coffin bone at the height of the sesamoid bones.
100	Mare. Heavy draught horse.	Lame in left leg, coffin joint lameness?	.....	May 18, 1901.	Tibial nerve with result.	Dec., 1904, still in service.
101	Gelding 8 years old. Driver.	Spavin of right leg.	Blistered.	June 12, 1901.	Tibial and peroneal nerve with result.	Rapid growth of the spavin node. After two months again lame
102	Mare. 10 years. Light wagon horse.	Spavin of right leg.	.....	Aug. 13, 1901.	Tibial and peroneal nerve with result.	Two years of good service, then sold for want of further use.
103	Stallion. 12 yrs. Heavy draught horse.	Spavin of left leg.	.....	Aug. 15, 1901.	Tibial and peroneal nerve with result.	Dec., 1904, still in service.

No.	Description.	Diagnosis.	Pre Treatment.	Day of Operation.	Nerve Operated on.	Subsequent History.
104	Stallion. 12 yrs. Heavy draught horse.	Spavin of right leg.	.....	Sept. 30, 1901.	Tibial and peroneal nerve with result.	Sold. In 1904 still in service of new owner.
105	Gelding. 14 yrs. Light draught horse.	Spavin of left leg.	.....	Nov. 7, 1901.	Tibial and peroneal nerve with result.	?
106	Gelding. 12 yrs Heavy draught horse.	Spavin of left leg.	.....	Jan. 29, 1902.	Tibial and peroneal nerve with result.	In autumn of 1904 still in service.
107	Gelding. 13 yrs. Driver.	Spavin of left leg.	Puncture fired.	Jan. 29, 1902.	Tibial and peroneal nerve with result.	?
108	Gelding. 6 yrs. Driver.	Spavin of left leg.	.....	Feb. 18, 1902.	Tibial and peroneal nerve with result.	Said to be still in service.
109	Gelding. 10 yrs Heavy draught horse.	Spavin of left leg.	Blistered.	March 6, 1902.	Tibial and peroneal nerve with result.	Still in service. Pronounced sidebone formation without lameness.
110	Mare. 7 years old. Driver.	Ringbone at pastern joint on right hind leg. (Periarthritis following punctured coronet.)	Blistered.	April 1, 1902.	Tibial nerve with result.	Sold in 1903. In the spring of 1904 still in service.
111	Gelding. 12 yrs Heavy draught horse.	Spavin of left leg.	.....	Feb. 22, 1903.	Tibial and peroneal nerve with result.	?
112	Gelding. 6 yrs. Heavy draught horse.	Spavin of right leg.	.....	Feb. 27, 1903.	Tibial and peroneal nerve with result.	In summer of 1904 said to be still in service.
113	Mare. 14 years. Light draught horse.	Spavin of right leg.	.....	March 5, 1903.	Tibial and peroneal nerve with result.	After 4 months again lame. Destroyed.
114	Mare. 16 years. Heavy draught horse.	Ringbone at the lower end of left hind osseofraginis. Lame one year.	.....	March 17, 1903.	Tibial nerve with result.	Splintering fracture of the os sufraginis after 6 months.

No.	Description.	Diagnosis.	Pre Treatment.	Day of Operation.	Nerve Operated on.	Subsequent History.
115	Mare. 14 years. Heavy draught horse.	Spavin of left leg.	.....	March 29, 1903.	Tibial and peroneal nerve with result.	?
116	Gelding. 6 years old. Heavy draught horse.	Spavin of left leg.	.....	April 4, 1903.	Tibial and peroneal nerve with result.	In service up to Nov., 1904. In Nov., 1904 fracture of third sesamoid or navicular bone in consequence of stepping on nail. Destroyed on account of this. Dec., 1904, still in service.
117	Gelding. 8 yrs. Heavy draught horse.	Spavin of right leg.	.....	Sept. 14, 1903.	Tibial and peroneal nerve with result.	Dec., 1904, still in service.
118	Mare. 12 years. Light draught horse.	Spavin of left leg. Very lame.	.....	Dec. 3, 1903.	Tibial and peroneal nerve with result.	Dec., 1904, still in service.
119	Mare. 10 years. Russian driver.	Spavin of left leg.	Puncture fired.	April, 1904.	Tibial and peroneal nerve with result.	Aug., 1904, died of peritonitis.
120	Gelding. 8 yrs. Heavy draught horse.	Coffin joint lameness of the right hind foot.	.....	May 23, 1904.	Tibial nerve with result.	Good service.
121	Mare. 10 years old. Heavy draught horse.	Spavin of right leg.	.....	Sept. 1, 1904.	Tibial and peroneal nerve.	After 14 days scar on place of operation on peroneal nerve ruptured. Great growth. Owner had animal destroyed.
122	Gelding. 20 years old.	Spavin of left leg. Repeatedly lamed for 3 years.	5 times cauterized and blistered.	Sept. 20, 1904.	Tibial and peroneal nerve with result.	Nov., 1904, again lame. Side-bone in formation.
123	Gelding. 14 yrs. Light draught horse.	Spavin of left leg?	.....	Oct. 7, 1904.	Tibial nerve alone with result.	Good service up to Dec., 1904.
124	Gelding. 8 yrs. Light draught horse.	Spavin of right leg. Very lame.	.....	Oct. 26, 1904.	Tibial and peroneal nerve with result.	Serviceable.
125	Gelding. 6 yrs Light draught horse.	Spavin of left leg. Very lame for 6 months.	.....	Nov. 16, 1904.	Tibial and peroneal nerve with result.	Serviceable.

On the posterior extremities neurotomy was performed on 125 horses with the resection of 239 nerves, as the following table shows:

	<i>Cases.</i>	<i>Nerves.</i>
Left tibial and peroneal nerves	58	116
Right tibial and peroneal nerves	47	94
Tibial and peroneal nerves on both feet	3	12
Left tibial nerve	9	9
Right tibial nerve	8	8
Total.	125	239

If we add the cases operated on by me previously and also those after the period of observation (Dec., 1904), the number then becomes not inconsiderably increased so that in regard to technic and results of these operations we may expect some valuable conclusions.

If grouped according to diagnosis, we get the following table:

RIGHT EXTREMITY.

<i>Diagnosis.</i>	<i>Cases.</i>
Spavin	42
Spavin (?)	3
Osteophytes, hock joint	1
Osteophytes, fetlock joint	1
Osteophytes, fetlock joint and hard gall	1
Ringbone, pastern joint	1
High degree of lameness in muscles of support (cause ?)	1
Ringbone and a soft gall	1
Enlargement of the os suffraginis, gall of the fetlock tendon sheath	1
Lameness of the coffin joint	1
Chronic inflammation of tendon and tendon sheath.	1

LEFT EXTREMITY.

<i>Diagnosis.</i>	<i>Cases.</i>
Spavin	54
Spavin (?)	3
Spavin and ringbone	1
Sidebone, hock joint	1

<i>Diagnosis.</i>	<i>Cases.</i>
Ringbone	3
Thickening of the flexor tendon and sheath	1
Lameness of the coffin joint	1
Looseness and atony of the ligaments of the fetlock joint	1
A high degree of lameness of the muscles and tendons of support	2

BOTH EXTREMITIES.

<i>Diagnosis.</i>	<i>Cases.</i>
Spavin (17, 36, 61)	3

In the 125 horses on which neurotomy of the posterier extremities was performed, in 21 cases (16.8 per cent. of the cases operated on) during the period of observation severe lesions developed which made it necessary to do away with the animals. These were rupture of the flexor tendon of the coffin bone at the height of the sesamoid bones in 7 cases or 5.6 per cent., fractures in 7 cases or 5.6 per cent., sloughing of the hoof in five cases or 4 per cent., suppuration of the tendon sheath in 1 case or 8 per cent., perforation of the horny sole in 1 case or 8 per cent.

Rupture of the flexor tendon of the coffin bone at the height of the sesamoid bones was observed in case 42, a heavy draught horse (looseness and atony of the ligaments of the fetlock joint); two months after the operation. In a second case also (No. 3), a heavy draught horse (hard gall of the tendon sheath at the fetlock); 3 months after the operation; tendon fibrillated, ossification in this and in the tendon sheath. In a third case (No. 8), a heavy draught horse (spavin?); five months after the operation. In a fourth case (No. 99) a light draught horse (spavin); 6 months after the operation. In a fifth case (No. 87) a heavy draught horse (a wind gall); 2 years after the operation. In a sixth case (No. 66) a trotting horse (sidebone on the fetlock and a hard gall); 2½ years after the operation. In a seventh case (No. 64) (ringbone and windgall); 3½ years after the operation.

Fractures.

1. Case 92, a heavy draught horse (spavin); 2 months after the operation; the clinical prominence found corresponded to a

fracture of the os tarsi centrale and os cuneiforme tertium.

2. Case 58, driver (spavin); 3 months after the operation; oblique fracture of the os suffraginis from getting caught in the street car track.

3. Case 51, driver (spavin?); 4½ months after the operation; oblique fracture of the os suffraginis.

4. Case 114, a heavy draught horse (ringbone at the fetlock); 6 months after the operation; communicated fracture of the os suffraginis.

5. Case 17, a light draught horse (spavin); 7½ months after the operation; fracture of the os cuneiforme tertium in the frontal plane.

6. Case 61, driver (spavin); 1½ years after the operation; suddenly great lameness and swelling of the hock, fracture of the rarefied os tarsi centrale and os cuneiforme tertium.

7. Case 116, a heavy draught horse (spavin); 1 year and seven months after the operation, fracture of the navicular bone in consequence of a nail puncture.

Sloughing of the Hoof.

1. Case 68, a light carriage horse (spavin); 3 weeks after the operation, fracture of the coffin bone and sloughing of the hoof.

2. Case 49, a heavy carriage horse (spavin); 2 months after the operation.

3. Case 85, driver (spavin); one year after the operation.

4. Case 6, a heavy draught horse (cause of lameness?); six and a half years after the operation in consequence of bad nailing.

5. Case 48, a light carriage horse (spavin); 4 years and 3 months after the operation, following inflammation of the lymph vessels.

Suppuration of Tendon Sheaths.

Case 9, a heavy draught horse (metastatic inflammation of the tendon sheath); 8 days after the operation.

Perforation of the Horny Sole through the Coffin Bone.

Case 60, a heavy draught horse, spavin; 17 days after the operation.

In the following appear a few cases which, taken together, should serve as control experiments to show whether the double neurotomy is always indicated in spavin or whether the resection of one nerve would be sufficient.

Case 4, spavin, tibial nerve (1899) with a result. Reported to be still in service in the summer of 1904.

Case 5, spavin, tibial nerve. Less lameness.

Case 7, spavin, tibial nerve. No result.

Case 8, spavin (?), tibial nerve. Lameness disappeared, after 5 months rupture of the flexor tendons.

Case 10, side bone (hock joint), tibial nerve. No result.

Case 13, spavin, April 17, 1899, tibial nerve. No essential change. April 25, 1899, peroneal nerve, complete result.

Case 14, spavin (a greater degree of lameness), April 28, 1899, tibial nerve, no result. May 19, 1899, peroneal nerve, lameness disappeared.

Case 18, spavin, May 30, 1899, peroneal nerve, without result. June 25, 1899, tibial nerve, lameness disappeared.

Cases 5, 7, 10, 13, 14, and 18 show the necessity for double neurotomy, so that in all the remaining cases both nerve trunks were cut. In case 8 the lameness was due to the presence of the spavin node, which caused pathological changes in the tendon at the height of the sesamoid bones.

Case 4 shows that no spavin lameness had been exhibited, although in the presence of a distinct spavin node, with a lameness which was called spavin lameness, and with otherwise negative results. The second possible explanation is an abnormal branching of the nerve; in this case the branch to the hock joint may have been wanting. This, however, is less probable.

The pathological and anatomical conditions in cases 17 and 61 correspond completely to the case observed and described by Fröhner (*Neue Mitteilungen über die Doppelneurotomie beim Spat. Monatshefte f. prakt. Tierheilk.*, XI. Bd.). The line of fracture in both cases went through the frontal plane of the bone. The preparation from case 61 is in my possession and is

an exact duplicate of Fröhner's case. The fracture occurred 4 months after the neurotomy in Fröhner's case ; in my case No. 17, after 7 months ; in my case 61, after 1 ½ years. In cases 54, 55, 80 and 92 to conclude the clinical picture we likewise find fractures of the tarsal bones. The explanation of the occurrence of these fractures is given by Fröhner in the following abstract : "On the other hand, in 2 of the 20 horses, eight and four months respectively after the neurotomy bone fractures occurred in the leg operated on, one fracture of the sesamoid bones and one of the os tarsale tertium or cuneiforme tertium. These may be referred indirectly to the resection of the nerve in accordance with the experiences known to follow other neurotomies. They must be explained pathologically in this way, either that trophic disturbances are brought about in the bone concerned by the neurotomy or that the horses, after the resection of both nerves on the leg in question, lose the power to measure rightly the strength necessary for stepping and walking and on this account use excessive force in the limb operated on, leading to bone fractures (spontaneous fractures). The latter interpretation appears to me the more probable."

I should like to agree with Fröhner's view. All these cases have in common that an opportune cause, a trauma (hard drive, etc.) is assignable. The special explanation of my case 61 by trophic disturbance, which first brought about such changes 1 ½ years after the operation, that the tarsal bones no longer provided the necessary resistance to pressure, appears forced to me. We are, however, always to consider whether trophic disturbances do not favor somewhat the rarefaction of the bones named. At any rate, there was among my cases one with pronounced rarefying osteitis present in the fractured tarsal bones. Fröhner's explanation is sufficient also for the cases of tendon rupture, since the heavier stepping and walking must destroy the tendons injured in their tense condition (infiltration of lime salts and ossification in the tendons and in the lamina of the tendons and in the lamina of the tendon sheaths, fibrillation and dissolution of the tendons into separate bundles).

In conclusion I should like to add a few observations worthy of notice in this connection.

Neuromata occurred but once and then on the proximal stump of the tibial nerve (case 23). This was a hard, very painful node, larger than a hazel nut, felt at the upper end of the tibial operation scar below the fascia. Hyperæsthesia was present in the extremity operated on.

Here and there I could observe during the operations that the nerve trunk was imbedded in a callus of connective tissue. The nerves concerned appeared to have enlarged to about twice or three times their original size, the epineurium was considerably increased, the nerve bundles were pressed further apart by increased perineurium, so that it must have been due to neuritis. Unfortunately, the histological facts are wanting, and the cases met with were not recorded very minutely.

Several neurectomies of the median nerve were interesting in that a very considerable amount of a clear, serous fluid was observed to exude corresponding to the use of hæmostatics during the isolation of the nerve trunk. This was due to the injury of the lymphatic trunks which accompany the larger bloodvessels. The exudation of this clear fluid (lymph) persisted for several days from the lower angle of the wound, and it seemed to retard somewhat the process of healing. Otherwise no injury was observed.

The results on the hoof were not constant. Thus in the first case (median nerve) a more rapid growth of horn came solidly into place, while in case 25 a diminished growth was present. At the same time the hoof became very wide in the quarters.

In case 4 the horn of the hoof became very hard, dry, and brittle. In narrow heeled or hoof bound animals repeatedly could be seen a distinct widening of the hoof in the course of several months. Whether the more frequent appearance of sloughing of the hoof on the fore foot (17.7 per cent. as opposed to 4 per cent. on the hind foot) can be explained alone by the greater frequency of breaking this one and by the greater con-

cussion to which the anterior limbs are exposed, is difficult to decide. Whether or not some diseased conditions of the great venous and lymphatic trunks in close proximity to which the neurotomy of the median nerve is performed, also play a role, I can only offer as a suggestion based on anatomy. At any rate, there are not infrequently large œdematous swellings and infiltrations met with on the anterior extremities, and these eventually, for the purpose of explanation, suggest trophic disturbances, perhaps of the vaso motors, perhaps of trophic nerves of their own, present in like manner in both fore and hind limbs. Frick in his admirable work on neurectomy (*Die Neurectomie mit Rücksicht auf ihre Indicationen und Kontraindicationen. Berliner Tierärztl. Wochenschr. Nr. 28, Jg. 1895.*) discusses especially the indications and contra-indications for the operation, as well as its value, and says that the so-called sloughing of the hoof is not yet an entirely explained result of the neurectomy, with which conclusion I must agree. Frick believes that equally with the mechanical strain of the increased work in connection with the increased moisture preceding this (enlargement of the bloodvessels, increased blood stream and richer nourishment of the parts concerned, especially the hoof) to an increased production of young, insufficiently horny cells in the transition layer between the corion and the horn capsule, to these must be ascribed an etiological significance.

In the case histories some diseases of the hoof are recorded which were not followed by evil results. With an early knowledge of the injury and opportune treatment many horses are again completely restored. From the large number of cases I might cite a few as examples :

1. Case 6. Chronic periarthrititis at the fetlock joint, July 29, '99, median and ulnar nerve, up to January, 1904, twice affected with stone bruise, connected with slight lameness. Recovery.

2. Case 15. Ringbone and ossification of the coffin cartilages, October 4, '99, volar nerves, stone bruises several times on the hoof of the extremity operated on, without injury.

3. Case 17. Chronic periarthritis at the carpus, Oct. 10, '99, median and ulnar nerve, in the year 1902, penetrating fissure of the hoof, phlegmon, operation and recovery.

4. Case 25. Thickening of the tendon, Dec. 2, '99, median nerve.

(a) One year after the operation, a superficial stone bruise caused a slight lameness.

(b) May, 1903, injured in shoeing, lameness.

(c) February and March, 1904, coffin cartilage fistula (on the inner side), recovery.

In addition, cases 29 and 32 with stone bruises, recovery, and many others besides.

In the inflammatory processes of the hoof matrix, even after resection of both principal nerve trunks, pain could be demonstrated repeatedly. Hence the original pain indicating the necessity of neurotomy was still present, or merely returned with better functioning of the extremity, and as I could convince myself by amputation of the stump of the nerve, a regeneration of this had not taken place, thus the connection was still broken. This manifestation of pain may be explained by the fact that sensory twigs of other nerves enter the nerve trunks, so that the peripheral ends resected by the neurotomy, for example, of the median nerve (Arloing and Tripier), are yet sensitive. On the other hand, it is to be considered whether in the course of time the neighboring nerves do not send out twigs into the region deprived of nerve supply (in man into the trigeminal area, after extirpation of the Gasserian ganglion) and so effect a narrowing of the numb portion. Both cases were considered in connection with the pectoral limbs of the horse.

(1) The nervus cutaneus antebrachii lateralis, which is given off by the median nerve in the middle of the arm (upper arm) and distributes branches to the skin of the anterior and medial surfaces of the forearm, the carpus and metacarpus down to the fetlock joint. (2) Possibly the ramus superficialis of the ulnar nerve, which is distributed on the anterior and outer side of the carpus and metacarpus down to the fetlock joint, in case it

branches off higher up than usual. (3) The *nervus cutaneus antibrachii dorsalis* of the radial nerve which, indeed, would have to go a long way downward from the carpus. On the pelvic limbs, the *nervus peroneus superficialis* and the *nervus cutaneus suræ posterior* would have to perform the task.

In the extremities on which neurotomy had been performed the appearance of paræsthesia was repeatedly noted.

In one case of nerve resection on the volar nerves there was observed a heavy stamping of the foot continuing for several hours. In case 11 it is noted that from time to time a large area of irritation or itching could be noticed on the scar of the neurectomy of the peroneal nerve. The horse tried to bite this.

In case 16 after the double neurotomy of the median and ulnar nerves, there was present on the leg a permanent area of irritation. In case 4 after resection of the median nerve irritation over the ringbone was in process of development because of biting the skin at that point. Through repeated nibbling and rubbing with the teeth not alone the skin but even the periosteum was penetrated so that the bone lay bare. In this way I saw an ulcer become established, which required a long time for healing.

In regard to the technic of the operation I should like to give the most important of my experiences.

The median nerve is best found somewhat below in the line of the elbow joint, on which account the foot in the shoulder must be drawn strongly outward and at the same time held forward midway. The assertion that the nerve is to be felt as a strong cord by palpation by stroking in an oblique direction to the longitudinal axis of the limb, applies only to thin and lean animals and is recommended for use on the cadaver also for want of a better landmark. In well-nourished muscular horses it is impossible to palpate the nerve cord with certainty through the antibrachial (forearm) portion (*pars sterno-costalis*) of the *musculus pectoralis superficialis* (*pectoralis major* of the human subject). On this account one must rely on the pulsation of the

arteria mediano-radialis and cut directly down on the pulsating vessel. The length of the incision (6-8 cm.) depends on the thickness of the soft parts. The upper angle of the wound lies in line with the elbow joint. The vessels in the subdermal tissues and in the musculus pectoralis which come under the knife, are looked after to provide against hæmorrhage. After the muscle is completely divided the yellowish white fascia of the forearm comes into view. The edges of the wound are now kept apart by means of hooks and the palpating finger can now feel the artery distinctly and usually also the nerve cord. In my neurotomies of the median nerve (over 100 cases) the artery at this point was situated in front (dorsally), the nerve behind. In but three cases did the median nerve have another position, once in front of the artery (dorsally) and twice covered by the artery, thus laterally from it. The topographical relations at this place are thus as follows: Directly below the fascia of the forearm lies the artery toward the front (dorsally), behind this is situated on account of its more flattened form at a somewhat deeper level of the nerve trunk, which covers the mediano-radial veins laterally situated from it. I now lay the index and middle fingers of the left hand on the pulsating vessel and parallel to this cut through about 5 mm. volarwards from (behind) the fascia of the forearm, whereby the nerve appears in the slit or space of the fascia, many times even pushing out of this. It is not usually necessary to extirpate a piece of the fascia. Now some fat tissue present (in very fat animals) is pressed out and the connective tissue of the vascular sheath (vagina vasorum) joining the nerve to the neighboring structures is carefully divided with the point of the scalpel on its anterior and posterior borders, so that one may push away the nerve trunk in the opposite direction with the surgical forceps. In this way the mediano-radial veins, covered by the nerve, come into view and it is now easy to keep the completely isolated median nerve on a hollow sound bent somewhat at the point (Struska, Lehrbuch der Anatomie). The mediano-radial vein usually divides into two branches enclosing the median artery.

I now cut through the nerve in the upper angle of the wound with a small scalpel (the herniotome answers the purpose very well) and remove from the distal stump a piece about 3 cm. long. Approximation of the borders of the skin is by button sutures. I do not unite the fascia and muscle. By observing these relations it is always easy to find the nerve if we emphasize the fact that the neurotomy of the median nerve more than all others demands the greatest care to avoid injury of the accompanying vessels.

An injury of the mediano-radial artery, the principal artery of the fore foot, might be fatal. An injury to the mediano-radial veins must likewise be avoided; this has, however, happened once in my experience (Case 9) in securing the nerve on the hollow sound with the point of this. I am convinced in this case that the necessarily doubled ligation of the veins with needles or with the Dechamp's hook is hardly practicable, because the danger of a new lesion is present, indeed of the neighboring veins or a connecting branch of the veins which freely anastomose here even with proximal and distal compression of the vessels by assistants and more complete freedom of the field of operation from blood. On this account I have quickly resected the nerve trunk and then tamponed the wound cavity with iodoform gauze, sewing over it. Some blood still trickled away when the horse stood up; thus when pressure ceased on the scapula lying below, the bleeding stopped. If small needles and fine silk are at hand, the repair of the injury to the veins follows, which technically is not impracticably difficult, as I was convinced in the case of a cut into a greatly dilated vena facialis (occasioned by the extirpation of a diverticulum of the parotid duct larger than a hen's egg with calcareous incrustation of the wall. The mistaken diagnosis was salivary calculus).

The ulnar nerve. In the course of the operations I was convinced that this nerve is frequently sought for too deeply and too far medianly. It lies above the trapezium in the fissure distinctly palpable between the two flexors of the knee (mm.

flexor and extensor carpi ulnaris) directly beneath the fascia of the forearm and in the split-like space found between the two flexors. It is imbedded in the loose cellular tissue, and accompanies the arteria and vena collateralis ulnaris. If it does not immediately come into view after cutting through the fascia, we secure the lateral border of the fascia with hooked forceps, draw it downward somewhat and look into the loose connective tissue between the muscles named, where one has a good guide in the vena collateralis ulnaris lying medianly and close to the nerve. The insertion of the tenaculum permits of no mistake, since the lateral flexor of the knee, together with the nerve sought for, can be drawn to one side by the laterally lying hook.

The tibial nerve is easily found in the middle of the space between the thick flexor of the coffin bone (*M. flexor hallucis longus*) and the tendon of Achilles. After cutting through the skin and fascia one takes up the plantar vein in the anterior tenaculum and in the middle of the wound divides the fat tissue where the nerve passes. This last is first completely isolated, while being careful to avoid the small recurrent tibial artery accompanying it laterally, the injury of which might be undesirable, since the cut ends retract into the fatty tissue and their recovery delays the operation.

Nervus peroneus (ramus profundus), peroneal nerve (deep branch). I operate at the junction of the middle and inferior thirds of the dorso-lateral surface of the leg and confine myself to the boundary between the muscular bellies of the long and lateral extensors of the toe (*M. extensor digit pedis longus* and *lateralis*). This boundary is marked by a shallow groove and a firmer resistance of the soft parts, which are caused by the anterior lateral intermuscular ligament (*septum intermusculare laterale anterius*), which passes from the common muscular sheath of the leg to the fibula and tibia respectively. (The *Fascias of the Horse*, by Prof. Eichbaum-Giessen. *Archives für Wissenschaftl. und Prakt. Tierheilkunde*, XV. Bd.) About 1 cm. in front of (dorsally to) this groove the incision is made

through the skin so that the two laminae of the fascia cruris (crural fascia) are divided, and the common muscular sheath for the long extensor of the toe (*m. tibial ant.* and *m. peroneus tertius*) is opened. In this sheath the nerve with the blood-vessels is enclosed. I now go through the loose connective tissue with the index finger of the right hand, and draw the muscular belly of the long extensor of the toe forward with a broad blunt hook. I then draw backward the lateral extensor of the toe covered by the lateral anterior intermuscular ligament, and the nerve sought for lies free on the *m. tibial ant.* With the Dechamp's hook one lifts the nerve out and cuts through it in the upper angle of the wound. An injury of the *vena tib. ant.* has never occurred in my experience.

At first merely the skin was sutured. With this plan there was twice observed (cases 11 and 14) a secondary healing with complications such that the muscular belly of the *m. extensor digit. pedis longus* was swollen so greatly that it extended into the space of the crural fascia. Hence occurred large fungus-like granulation growths on the crowded, œdematous muscle and in spite of the use of knife, scissors, cauterly and astringents, many weeks were required before a normal granulation tissue formed; hence the same relations were observed as one sees sometimes after a lacerated wound frequently on the dorso-lateral surface of the leg. Since I also observed similar unfavorable sequelæ on the part of both flexors of the knee in resection of the ulnar nerve, I attempted to avoid them by suturing the fascia. Neither the cat-gut sutures or the silk are wholly satisfactory. The former is uncertain on account of too early absorption, the latter may, if it is not perfectly aseptic, lead to long-continued suppuration. On this account I now insert one suture through both skin and fascia, which proves satisfactory. I first pass a longer silk suture through the skin and the superficial layer of the crural fascia of the same side about 5 mm. from the edge of the wound (more than this is not included because the tension of the fascia becomes too great), then through the fascia and the skin of the other border of the incision. I

insert three or four such silk sutures (usually three are sufficient) depending on the length of the incision.. These are not tied at once. Then I close up the skin by button (interrupted) sutures (interrupted sutures to relieve tension are not necessary in all cases of neurotomy) or the running suture. Lastly the corresponding sutures including both skin and fascia are drawn up and tied. In this way the slit in the fascia closes satisfactorily. The sutures, including both skin and fascia, are then removed along with the remaining button (interrupted) sutures on the eighth or ninth day. After using this method, I have no longer seen the unfavorable sequelæ mentioned.

The contribution of Dr. Schmaltz ("Anatomische Notizen," *Berliner Tierärztl. Wochenschr.*, Nr. 7, 1905) to the effect that the peroneal nerve should be sought for below the head of the fibula, I have repeatedly proven on the cadaver and also on two patients and am convinced that the deep branch is to be easily and safely found here. In the neurectomy of this nerve, tracing out the muscular branches and the superficial branch is omitted on which account the incision of the skin running obliquely forward, is directed further dorsally and somewhat below the lower end of the tuberosity of the tibia. After dividing the two layers of fascia one finds at once the groove between the m. extensor digitorum pedis longus and lateralis, then divides the here thin, common muscular sheath and raises the nerve trunk out of the groove. After practicing on the cadaver I am convinced, that 1-3 cm.. distally from the branching of the ramus profundus and the muscular branches going to the m. extensor digitorum pedis longus and m. tibialis anterior (Schmalz IV.) there is given off constantly from the peroneus profundus a branch to the m. extensor digitorum pedis longus at about the thickness of a quarter of the nerve trunk, which branch is resected in the operation at the place designated by Schmalz. By means of two neurectomies carried out on the living horse according to this method an atrophy on the part of the long extensor of the toe was not established, so that the inference is reasonable that the principal mass of the muscular fibres of the

muscle named are enervated sufficiently by the muscular branch (Schmalz IV.).

The neurectomy on the volar and plantar nerves was performed in the usual manner.

With regard to the indications and contra-indications for neurectomy I can express myself briefly concerning the case histories and the unfavorable circumstances. Among the most important contra-indications I should include first brittle and otherwise bad hoofs, especially in horses which are inclined towards a more rapid gait, secondly, so-called hard galls of the fetlock on account of the danger of tendon rupture (more frequent in the posterior extremities), third, tendency toward fissures even though many weeks have passed since the injury.

On the strength of my experiences, I have reached the conclusion that neurectomy is only to be performed as a last resort in the case of the more valuable horses. It is, however, permissible as an immediate measure if the indications are present, when the smaller value of the horse is incompatible with a longer period out of service and greater expense.

PENNSYLVANIA VETERINARIANS are asking their Legislature to appropriate sufficient funds to pay for the services of an Assistant State Veterinarian, so important has grown the work and so large have grown the demands upon that office that the present officer is greatly in need of assistance.

THE suit brought by the Memphis Trotting Association to recover the Gold Cup won by E. E. Smathers' "Major Delmar," who defeated C. K. G. Billings' "Lou Dillon," the suit being based upon the alleged "doping" of the latter, brought to the front considerable expert veterinary testimony, as to the effects of certain poisons and the symptoms of "thumps." Aconite is the drug alleged to have been administered, but the defence endeavored to prove that the mare was suffering from palpitation of the heart, brought on by overtraining. Among the veterinarians who were called were: Drs. J. W. Scheibler, of Memphis; R. W. McCully and H. D. Gill, of New York. One expert said that the effects of aconite would commence in 20 to 40 minutes after administration, while another claimed that the effect would be immediate.

OSTEOPOROSIS OR BIGHEAD.

BY JOHN R. MOHLER, V. M. D.,

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Presented to the March Meeting of the Veterinary Association of the District of Columbia.

My principal object in presenting a paper on osteoporosis to-night is not to bring out any new ideas of my own on the subject, but rather in the hope of starting a discussion which will elicit more important information than I could hope to include. As you all know, osteoporosis is a general disease of the bones which develops slowly and progressively and is characterized by the absorption of the calcareous or compact bony substance and the formation of enlarged, softened and porous bone. This fragile and deformed condition is particularly manifest in the bones of the head, causing enlargement and bulging of the face and jaws, thereby giving rise to the terms bighead and swelled-head which are applied to it. The disease affects horses, mules, and asses of all ages, classes, breeds, and of both sexes, but is probably more frequently observed in mature horses and Shetland ponies. The disease is found under all soil, food and climatic conditions. It may occur in sporadic form, but in certain regions, such as South Africa, Hawaii, and in this country, it seems to be enzoötic, several cases usually appearing in the same stable or on the same farm, and numerous animals being affected in the same district.

Names applied to this disease.—This affection has been commonly termed bighead, swelledhead or bone-softening, by horsemen, but it is also known under the more elaborate names of osteoclastia, enzoötic ostitis, rarefying ostitis, osteomalacia, fragilitis ossium and osseous cachexia.

History.—Very little literature has been presented on this disease, which indicates that either limited attention has been given to osteoporosis, or that it has been confused with other affections. In Europe the disease appears to be quite rare and is usually described as a form of osteomalacia, a disease which is not uncommon among cattle of that continent. "Bran dis-

ease" of European horses, said to be due to an excessive bran diet, is considered as quite a distinct affection. This latter condition cannot be differentiated from the "millet disease" of this country, which is in practically all respects similar to bighead. However, the opinion that bighead is only a form of osteomalacia cannot be accepted, nor can the infrequency of the former among horses and the frequency of the latter among other live stock be conceded on the argument which has been presented, namely, that the better care horses receive prevents them from becoming affected. In the Southwest, where osteomalacia or creeps has not infrequently been observed by the writer among range cattle, no case of osteoporosis of the horses using the same range has been noted, although the latter animals are given no more care or attention than the cattle.

The appropriate treatment of osteomalacia in cattle is so well known and so effective that if osteoporosis were a similar manifestation of disease, a similar line of treatment should prove equally efficacious. However, this is not the fact. On the other hand, occurrences of osteomalacia on old worn-out soil or land deficient in lime salts or from eating food lacking in these bone-forming substances, or a lime deficiency in the drinking water, is in perfect accord with our knowledge of the disease. But osteoporosis may occur on rich, fertile soil, in the best hygienic stables, and in animals receiving the best of care and of bone-forming foods with a proper amount of mineral salts in the drinking water. Bighead probably occurs more frequently in this country than in Europe, and in certain sections appears in an enzoötic form, as it does in Australia, South Africa, India, Madagascar and Hawaii. In some of these outbreaks in this country that have come under observation, the cattle and sheep that have been fed the same hay and grain and stabled in the same barn have not shown the least evidence of osteomalacia. For these reasons osteoporosis is considered as a complete entity entirely independent of osteomalacia. The disease has been found in this country in all the states bordering the Delaware River and the Chesapeake Bay, in the District of Columbia, in

some of the New England states, and in many of the Southern states, especially along the coast, and in regions of low altitude.

Cause.—The cause of this disease still remains obscure, although various theories have been advanced, some entirely erroneous, others more or less plausible, but none of these have been established. Thus faulty food has been a favorite explanation, but the idea that feeding fodder and cereals poor in mineral salts, and grazing in pastures where the soil is poor in lime and phosphates, will cause the disease has been easily disproved in many instances. This cause is accepted for osteomalacia in cattle, but not for osteoporosis in horses, since the disease is seen on limestone soils as in New York State, and in animals generously fed on grain and those which are well fed and in good condition, as in many cases in Philadelphia and Washington. Some veterinarians have considered that the disease started as a muscular rheumatism, which is followed by an inflammatory condition of the bones, terminating in osteoporosis; while others have thought it was due to forced or high feeding. The idea that the disease is contagious has been advanced by many writers, although no causative agent has been isolated. Numerous experiments have been made by inoculating the blood of an affected horse into normal horses, but without results. Also a piece of bone taken by Pearson from a diseased lower jaw of a colt was transplanted into a cavity made for it in the jaw of a normal horse, but without reproducing the disease. Prétrone believes that the *Micrococcus nitrificans* causes osteomalacia in man as a result of its producing nitrous acid, which absorbs the calcareous tissues. When injected into dogs in pure culture a similar disease is produced. It is probable that if this work is confirmed that a similar causative factor will be discovered for osteoporosis. Elliott considers the latter to be a microbic affection due to climatic conditions, and divides the Island of Hawaii into a district in which the rainfall is 150 inches annually, where bighead is very prevalent, and into a second district, which is dry and rarely visited by rain, where the disease is unknown. Removal of animals from

the wet to the dry district is followed by immediate improvement and frequently recovery. In the wet district horses in both good and bad stables take the disease, but in the dry district no unfavorable or unhygienic surroundings produce the affection. As both native and imported horses are equally susceptible there is no indication of an acquired immunity to be observed. If bighead is a microbic affection, and it certainly has many of the characteristics of an infectious disease, it is probable that the cause is a nitrifying organism which prevents the proper assimilation of the nutrient salts, even though these ingredients are contained in the proper proportion in the food. Or these organisms may act directly on the nerves nourishing the bony structures, as the rabies or tetanus virus does on the central nervous system. Theiler has recently stated that his experiments in transfusing blood were also negative, and suggests that the cause may only be transmitted by an intermediate host like in Texas fever. He draws attention to this method of spreading East African coast fever, although blood inoculations are always without result. We know coast fever is infectious, that it cannot be transmitted by blood inoculations, but that it occurs with remarkable ease through ticks coming from diseased cattle. That the cause of osteoporosis has not been observed may be accounted for by its being invisible even to the high powers of the microscope. On some farms and in some stables bighead is quite prevalent, several cases following one after another. On one farm of thoroughbreds in Pennsylvania all the yearling colts and some of the aged horses were affected during one year; and on a similar farm in Virginia a large proportion of the foals for several years were diseased, although the cows of this farm remain unaffected.

Symptoms.—The commencement of the disease is usually unobserved by the owner, and those symptoms which do develop are generally not well marked or misleading, unless other cases have appeared in the vicinity. Until the bones become enlarged the symptoms remain so vague as not to be readily diagnosed. The disease may present itself under a variety of

symptoms. If the bones of the hock become affected early in the disease the animal will first show a hock lameness. If the long bones are involved first, symptoms of rheumatism will be observed, while if the dorsal or lumbar vertebra are affected, indications of a strain of the lumbar region are in evidence. Probably the first symptom to be noticed is a loss of vitality, combined with an irregular appetite or other digestive disturbance, with a tendency to stumble while in action. Poor mastication of food resulting from the early changes in the jaw-bones may direct attention to the teeth, and a futile attempt is sometimes made to relieve this condition by floating the teeth. However, these earlier symptoms may pass unobserved, and the appearance of an intermittent or migratory lameness, without any visible lesion to account for it, may be the first sign to attract attention. This shifting and indefinite lameness, involving first one leg and then the other, is very suggestive, and is even more important when it is associated with a tendency to lie down frequently in the stall, and the absence of a desire to get up, or the presence of evident pain, stiffness and difficulty in arising. About this time or probably before, swelling of the bones of the face and jaw, which is almost constantly present in this disease, will be observed. The bones of the lower jaw are the most frequently involved, and this condition is readily detected with the fingers by the bulging ridge of the bone outside and along the lower edge of the molar teeth. A thickening of the lower jaw bone may likewise be identified by feeling on both sides of the lower border of the jaw and comparing it with the thinness of this bone in a normal horse. As a result mastication becomes difficult or impossible, and the teeth become loose and painful. The imperfect chewing which follows causes balls of food to form, which drop out of the mouth into the manger. Similar enlargements of the bones of the upper jaw may be seen, causing a widening of the face and a bulging of the bones about midway between the eyes and nostrils. The nasal bones also become swollen and deformed, which together with the bulging of the bones under the eyes give a

good illustration of the reason for the application of the term bighead. Other bones of the body will undergo similar changes, but these changes are not so readily noted except by the symptoms they occasion. The alteration of the bones of the spinal column and the limbs, while difficult of observation, are nevertheless indicated by the reluctance in the animal to get up and the desire to remain lying for long periods of time. The animal easily tires, moves less rapidly, and if urged to do so may sustain a fracture or have a ligament torn from its bony attachments, especially of the long bones of the leg. An affected horse weighing 1,000 pounds was seen by the writer to fracture its first phalanx from rearing during halter exercise.

The animals become poor in flesh, the coat is rough and lustreless, the skin tight and harsh, producing a condition termed "hide-bound," with considerable "tucking-up" of the abdomen. The horse shows a short, stilted, choppy gait, which later becomes stiffer and more restricted, while on standing, a position simulating that in founder is assumed, with a noticeable drop to the croup. The animal at this stage usually lies down and remains recumbent for several days at a time. Bed sores frequently arise and fractures are not uncommon, as a result of attempts to arise, which complications, in addition to emaciation, result in death. The disease may exist in this manner for variable periods, extending from two or three months to two or more years.

Lesions.—As has been stated, the bone is the principal tissue involved. The nutrition of the bone is disturbed, as is indicated by the diminished density or rarefaction of the bony substance, the increase in the size or widening of the Haversian canal and the medullary cavity, and the enlargement of the network of spaces in the spongy tissue, the absorptive changes following the course of the Haversian system. In this process of absorption there are formed within the substance of the bone, areas of erosion, indentations or hollow spaces of irregular shape. These spaces increase in size and become confluent, causing a honeycombed appearance and an irregular thicken-

ing and enlargement of the bone. When fractures occur no callus forms, but if the ends are left free they rub together and become smooth. The articular and intervertebral cartilages at times become eroded and may disappear, while occasionally either true or false ankylosis takes place. The affected bone may readily be incised with a knife, and the cut surface appears finely porous, resembling some varieties of coral. This porous area is soft, pliable, and yields easily to the pressure of the finger. It has been shown by chemical analysis that the bone of an osteoporotic horse, when compared with that of a normal horse, shows a reduction in the amount of fat, phosphoric acid, lime, and soda, but a slight increase in organic matter and silicic acid. The bones lose their yellowish-white appearance, becoming gray and brittle. The affected bones may be those of any region or portion of the body, or of the long, short or middle class of bones. Besides the changes already noted in the bones of the face, the ends of the long bones, such as the ribs, are involved and may be sectioned, though not so readily as the facial bones. The bones of the vertebræ are also frequently involved, necessitating great care in casting a horse, as the writer has seen several cases of broken backs in casting such animals for other operations. The marrow and cancellated tissue of the long bones may contain blood extravasations and soft gelatinous material or coagulated fibrin. Internal organs are usually normal, but a catarrhal condition of the gastro-intestinal tract may be noted as a result of the improper mastication, resulting from the enlargement of the jaws and soreness of the teeth.

Diagnosis.—The recognition of bighead, after the disease has fully developed, is not difficult, but in the early stages, when the symptoms are variable and obscure, it is probably frequently mistaken for muscular or articular rheumatism, which is more likely to attack the upper joints of the legs and is found associated with fever.

Prognosis.—The prognosis is uncertain at best, but is more likely to be favorable if treatment and an entire change of food, water, and location is adopted in the early stages of the disease.

Treatment.—The affected animal should be immediately placed under entirely new conditions, both as to food and surroundings. If the horse has been stable fed, it is advisable to turn it out on grass for two or three months, preferably in a higher altitude. If the disease has been contracted while running on pasture, place the animal in a stable or corral in a different locality. In the early stages of the disease, beneficial results have followed the supplemental use of lime given in the drinking water. One peck of lime, slacked in a cask of water, and additional water added, from time to time, is satisfactory and can be provided at slight expense. This treatment may be supplemented by giving a tablespoonful of powdered bone meal in each feed, with free access to a large piece of rock salt, or the bone meal may be given with four tablespoonfuls of molasses mixed with the feed. Crude calcium phosphate, in 2-dram doses, three times daily, may prove beneficial. Pure phosphorus may also be given in $\frac{1}{4}$ -grain doses, three times daily, in the form of pills, in cacao butter. The bowels of the animals should be kept loose, and overloading of the gastro-intestinal tract carefully guarded against at all times. Foods containing mineral salts, such as beans, cow peas, oats, and cottonseed meal, may prove beneficial in replenishing the bony substance that is being absorbed. The latter is one of the best foods for this purpose, but it should be fed carefully. In addition to liberal feeding on sound and nutritious grain, supply the best hygienic conditions obtainable, avoiding low, damp pastures, as well as basement or damp stables. The animal should not be allowed to work at all during the active stage of the disease, nor should it be used for breeding purposes.

"I surely would be lost without the REVIEW."—(*George Springer, V. S., Hastings, Neb.*)

"With pleasure I remit my annual mite to the REVIEW."—(*Peter F. Bahnsen, V. S., Pres. Ga. S. V. A., Americus, Ga.*)

PRIZES at the forthcoming International Horse Show in England, June 7-13, foot up \$37,500. There are fifty classes for heavy harness horses, five of which are open to dealers only.

ARTIFICIAL IMPREGNATION IN DOMESTIC ANIMALS.

BY E. A. A. GRANGE, V. S., NEW YORK CITY.

Presented to March Meeting of the Veterinary Medical Association of New York City.

The subject of this paper has been attracting more or less attention in breeding establishments during the past few years, and as there seem to be some features which have not been already discussed, I have been requested to bring the question before you, and also to present a few points which I gathered in various ways as years rolled by.

By way of introducing the subject, it may be well to follow the example of those investigators who have given so much attention to the etiology or cause of disease during the past twenty or thirty years; and in doing so it will be in order to review some of those conditions which prevent fecundity in the natural way; for, if we do not understand the cause of an evil, it is hardly possible to adopt intelligent measures in its removal, and thus more harm than good may be done by laboring in the dark.

To begin with, sterility or infecundity may be regarded as the unfruitful result of copulation, and may be discussed under two distinct heads, viz.: permanent sterility and temporary sterility. The former is, unfortunately, beyond our reach as far as overcoming it is concerned, in most instances; for example, hermaphrodites, or those animals which possess so many of the characteristics of the opposite sex to which they really belong—a stallion looking like a mare and such like; animals of this description are invariably barren.

In cattle, when twins are born, the one a male, the other resembling a female, the latter is called a "free martin" and as a rule they will not breed because they are usually hermaphrodites. Those free martins which I have examined after death have always been so defective in the make up of their generative organs that it would have been impossible for them to have conceived.

Hybrids are usually barren, although there are some cases reported in which the female mule is said to have produced offspring. It is also the result of disease of the generative organs, such as fatty degeneration of the ovaries, or some other disease. I once saw a case in a bull which I attributed to tuberculosis of the testicles, and another case in a cow to general tuberculosis of her generative organs; her entire womb was little more than an indurated mass of tubercular deposit. Other cases, in stallions, have been the result of inability on the part of the testicles to form spermatozoa; at least I failed to find them in the fluid collected immediately after copulation and examined with the aid of a microscope.

The temporary causes of sterility are numerous but not always difficult to overcome; it is sometimes the result of premature or late coition, when the generative organs of the female are not in proper condition for conception; in other words, when she is not in season.

Some breeders believe that mares accustomed to hard work, active exertion before service is favorable to conception; and the Arabs for this reason are said to gallop their mares to such an extent as to bring them breathless before the stallion, and when the act is accomplished, leave them for a few hours to cool down; but I have seen the opposite to this procedure, both before and after copulation, so often practiced with satisfactory results, that I have yet to be convinced that one method has any real advantage over the other. Change of climate also seems to have a marked effect upon fecundity, sometimes putting it indefinitely in abeyance. I have known cases where even removal from one State to another seemed to have a baneful effect on the fecundity of the cow.

I think there is one cause of infecundity in the female which is often overlooked, and the failure to conceive is often attributed to a wrong cause, and male animals are condemned as not being sure "getters," when really the fault, if it may be so called, is with the female. In an effort to make myself clear upon this point, let me say that the mental picture which I have

drawn in my mind's eye, in connection with the bursting of the Graafian vesicle and the discharge of the ovum is, that the pavilion of the fallopian tube is conveyed around the surface of the ovary by its fimbriæ in search of a ripe vesicle, and when it finds one and surrounds it in a proper manner the ovum is collected, and if other conditions are favorable, the process of reproduction is soon set agoing; but the movement of the fimbriæ are under the control of the sympathetic nervous system, and we have abundant evidence that the operations of this system are very fickle, for which reason I think it is fair to assume that it often misses or fails to select the right spot upon the ovary to collect the ovum, and as a consequence the female fruit of impregnation escapes into the abdominal cavity, where it may soon perish; and as the œstrum may have come on in the regular manner and other things have been conducted in a regular way, but the service fails to impregnate and the male is wrongly blamed for the failure. A strong argument in favor of this theory is, that artificial methods of impregnation sometimes fail for one or more trials, and again we have that peculiar condition of extra-uterine pregnancy demonstrating most conclusively that the ovum sometimes escapes into the abdominal cavity.

Again, temporary sterility may be due to constriction of the mouth of the womb, the result of spasmodic contraction or organic disease of the tissues forming it; the former condition may sometimes be overcome by inserting a suppository of belladonna or some other antispasmodic, but the latter requires more positive and energetic treatment, which consists in some mechanical means for opening it up, such, for instance, as spreading it with the fingers or one of the many instruments designed for the purpose, and on theoretical grounds that would seem to be all that is necessary; but my own experience, as well as unsatisfactory results from the operation which have been reported to me by other veterinarians, causes me to believe that more heroic measures should be adopted; and an operation which I performed on a cow a few years ago tends to verify my suspicions and al-

so shows that considerable liberties may be taken with the os uteri without doing permanent injury to the animal.

For the purpose of a clearer understanding of the affair, it may be well to relate the various circumstances which led up to the operation, which, by the way, I now regard as a compromise between artificial and natural impregnation.

One of my patrons, a short-horn breeder, purchased a cow, several hundred miles from his farm, and after bringing her home subsequent efforts failed to produce impregnation, and it was finally arranged that I should visit the farm on a day when the cow would be in season. I did so, but was informed by the owner that he had telegraphed me not to come as the cow had come in season the day before the appointed time; but I did not get his message, and when I arrived all evidence of the œstrum had subsided. After a short parley with the owner, the cow was handed over to me with permission to do as I pleased with her; I forthwith made an examination and found the os so firmly contracted that it would not yield to pressure of the index finger, although it was pushed against it until the cow exhibited her discomfiture by a moan, at which signal I decided I had gone far enough with that part of the operation. I then introduced a concealed bistoury, which had been prepared for the purpose, and made a slight incision across the circumference of the organ, but it was not sufficient to permit free passage of the finger, although I had gained some ground; whereupon, I made incisions until I could get the finger all the way through to the last joint; then, by manipulation, I finally got my entire hand, as far as the wrist, through the opening and into the womb. I then concluded that the limit had been reached as far as operating was concerned. The cow was then, with much difficulty, served by the bull, though, as might be expected, the service was of no avail; but, anticipating this, I left instructions to have her served the next time the heat came on, and without any artificial interference. This was done, but somewhat to my disappointment the cow did not hold, as the heat came on a second time, and I had some visions that I

might have carried the operation too far and possibly set up an inflammation which had again closed the mouth of the womb. However, I wished to give the work a thorough test, and once more gave instructions to have the second or, rather, third service performed in the natural way, and as a consequence the cow held this time, and in nine months produced a fine vigorous calf.

I doubt very much if cases like the foregoing could be impregnated by the ordinary artificial means which are now adopted without, first of all, breaking up the occlusion.

Another cause of sterility is undue protrusion of the cervix into the vagina and misplacement of the os uteri; the treatment is obvious.

Turning for a few moments to that which may be regarded as purely artificial impregnation, I venture the opinion that if this operation is properly performed, the percentage of fecundated mares and cows will be materially increased, and we will hear little more of shy-breeders, while the offspring, as far as my observations have gone, are just as vigorous and perfect as those produced in the natural way, and the fecundating fluid of the male may be economized to a remarkable extent. In the literature of the subject I find mention made of fecundating two or even three mares with one discharge from the stallion, and a Kentucky breeder informed me recently that six mares had been impregnated from a single discharge at his farm. Then the risk of service is avoided, and no doubt other things of minor importance but still in favor of artificial impregnation.

The technique of the operation is simple in the extreme, especially for those who are familiar with the anatomy of the parts, and who observe due cleanliness in their operations. The instruments required are simply a suitable syringe and a glass beaker, or some such vessel warmed to about 100° Fahr. I have used a water-bath for keeping things warm (a sand bath might be more convenient), and when a number of animals are to be fecundated from a single discharge, I think the chances of success are greater when the fluid is kept at about the temperature of the body.

The animals to be operated upon should be close at hand.

The service is conducted in the usual way, and immediately after, the fluid is collected from the end of the penis, from which a considerable quantity will usually flow, and this may be augmented with that which comes from the vulva of the female; a clean syringe is then charged with the required amount, which in its turn is injected into the os uteri, and the operation is completed.

The remarkable things which are transpiring in the scientific world these times, in transplanting specific fluid cultures for certain soils and crops; and work of that kind has caused me to think that there is a good, and unexplored field for experimentation in transporting the male fruit of impregnation hundreds if not thousands of miles.

TWO Bayonne, N. J., litigants claimed the ownership of the same horse; the evidence presented on each side was equally balanced; the judge declared his inability to decide who was the rightful owner. At last one of the contestants, Cohn, suggested that the horse be turned loose in the street, averring that if he was his horse he would go straight to his (Cohn's) stable. This was done, and the horse started off at a lively trot, and never stopped until he arrived at Cohn's stable. The judge accepted the horse's decision.

THE THOROUGHBRED HORSE.—A correspondent asks whether the term "thoroughbred" can be properly applied to other than running horses. Custom has narrowed the word "thoroughbred" down to the class or breed of horses which are otherwise called "runners," or "running horses." "Trotters" and "pacers" are said to be "standard-bred," or "pure-bred"—in the former case when breeding entitles them to register, or where a deficiency in breeding is made up by performance. The term "pure-bred" is mostly confined to other species of animals, as bovines, canines, swine, etc., where the breeding is free from extraneous blood. There is also a difference to be noted where the word "thoroughbred" is used as an adjective and as a noun; thus the expression, "a thoroughbred trotter," may be admissible, although it would be incorrect to qualify the same animal as a "thoroughbred." It would sound better to say "a pure-bred trotter."

MODERN VETERINARY METHODS.*

By WALTER J. TAYLOR, D. V. M., Ithaca, N. Y.

THE ACTION OF PATHOGENIC BACTERIA IN REFERENCE TO IMMUNITY.

Because of the variation of resistance to infecting organisms in a given species as well as the wide range of susceptibility of individuals to them, no hard-and-fast rule can be laid down as to what constitutes that condition in a given individual which we term immunity. Ordinarily the term is restricted to the infectious diseases. It may be said to signify in the individual a condition by which it is enabled to successfully defend itself against the invasion of its tissues or organs by the infecting organism, or to resist the toxic effects of these invaders should they gain entrance into the body and multiply therein.

While the term usually applies to the action of the pathogenic bacteria, the protozoa are not to be excluded. It must be understood that immunity is only relative; it is neither permanent nor constant, but varies with natural and artificial conditions. According to the process by which it is established in an individual immunity is recognized as natural or artificial.

The problem of immunity in relation to infectious diseases is one that not merely concerns general pathology, but has a very important bearing on all branches of practical medicine, such as hygiene, surgery and the veterinary art. The prevention of disease by the production of an acquired immunity is assuming greater importance daily. The immunization of animals useful to man is therefore a question of such great importance to agriculture and to the great live-stock interests of this country, that it seems eminently fitting that the subject should receive its full quota of attention.

During the greater part of the nineteenth century our knowledge as to immunity has been limited to certain practical methods, often efficacious it is true, but purely imperical, such as those employed in immunizing man against small-pox and certain domestic animals against such diseases as sheep-pox or pleuro-pneumonia.

* Previous chapters in this series of articles, beginning in the December number, and appearing each month since, were upon "Diagnosis," "Differential Diagnosis," "Tuberculosis," "Glanders," "Rabies," and "Anthrax."

So long as the nature of the viruses was unknown no really scientific study of their actions or of immunity from them could be made. The revelation of the organized nature of the infective viruses opened up the way for these researches. This discovery, the outcome of the demonstration by Pasteur of the organized nature of the ferments, has enabled us to establish the part played by living agents in a great number of infective diseases, and, linked with the names of Davaine, Obermeyer, and Robert Koch, it has very greatly advanced the study of susceptibility and of natural immunity in certain infections.

A considerable forward step was made with the discovery, by Pasteur and his collaborators, that it was possible, in certain infective diseases, to confer immunity by means of microorganisms which had had their virulence attenuated. The field of research was still further enlarged by the demonstration of the immunizing power of the culture-products of pathogenic microorganisms and later by the discovery that the blood of immunized animals is capable of conferring immunity upon susceptible individuals.

Before taking up the problem of immunity as it is revealed to us as a consequence of these discoveries, it is essential to cast a glance at infective and allied diseases as a whole, and to indicate in what light we look upon them in the present state of our knowledge.

It has been definitely established that many infective diseases of men and animals are due to the invasion of small parasitic organisms, sometimes of animal nature, as in malaria and Texas fever, sometimes belonging to the vegetable kingdom. By far the greater number of infective diseases are due to the development in the organism of plants of the simplest structure, bacteria. These bacteria produce the gravest and most destructive infections, such as tuberculosis, diphtheria, anthrax, the pneumonias, suppuration, tetanus, glanders, etc. Among these are those too small to be detected even under the highest magnifying powers. To this minuteness of certain pathogenic agents is very probably due the fact that in a considerable number of infections, amongst which are scarlatina, rabies, foot-and-mouth disease, rinderpest and dog distemper, it has been impossible up to the present to recognize any specific microorganism.

For a better understanding as to the role played by bacteria in the production of disease and immunity, Kruse's classification relative to pathogenic bacteria is appended.

Kruse's classification of bacteria relative to pathogenesis.

- I. Saprophytes (bacteria that are not infectious).
 1. Bacteria not toxic. Devoid of harmful action.
 2. Toxic bacteria. Cause sapremia by producing toxic ptomains.
- II. Parasites (infectious or virulent bacteria).
 1. Bacteria that cause local infection.
 - a. Small growth, strong toxine producing power, as tetanus.
 - b. Vigorous growth in the deep tissues, as typhoid.
 - c. Vigorous growth on the surface, as in diphtheria.
 2. Bacteria causing general infection.
 - a. Growth spreading by continuity, as in erysipelas.
 - b. Growth spreading by metastasis, as in tuberculosis.
 - c. Growth general in blood and tissues, as in septicæmia.

Thus we see that the pathogenic^{*} bacteria act differently in the production of their respective diseases, a fact of great importance in the production of immunity. In the acquiring of the power to live in the tissues of living animals many bacteria such as those of tuberculosis and leprosy become parasitic to such an extent that their disease-producing power is largely restricted to their excessive multiplication and destruction of tissue.

On the other hand there are certain bacteria which are distinguished by a very much feebler reproductive power, but a more marked toxic activity. Incapable of spreading through the organism, these bacteria remain localized at the point of entrance, where they secrete their poisons and thus frequently set up a fatal intoxication. Some of these bacteria, such as the bacilli of tetanus and the organisms of diphtheria, penetrate more or less deeply into the living tissues of the affected animal.

Instances exist in which the pathogenic microörganism disappears from the body, leaving there a toxin which, alone, is responsible for death. Thus in the spirillar septicæmia of geese, the birds die at a stage when not a single living spirillum can be found in the body. The poisoners have been destroyed before the toxin produced by them has completed its work.

This great variability in the action of the different pathogenic agents is still further increased through the differing relations between the parasites and the affected organism. Cer-

tain microorganisms are capable of producing a typical disease, whatever may be the mode and seat of invasion. But these are comparatively few in number. The organism of tuberculosis belongs to this class. On the other hand a very large number of pathogenic microorganisms only exert their action when they invade the organism at definite points.

All these variations and peculiarities associated with the nature of infective agents are of great importance from the viewpoint of immunity.

(To be continued.)

A PAIR of draught geldings was recently sold on the Chicago market for \$1,250.

HORSE AND HUMAN KEEPING STEP.—Government statistics show that the soliped population of the United States is increasing just as rapidly as the human inhabitants. Since 1900 each has increased about 8,000,000. These remarkable figures for the horse and mule seem almost incredible, in view of the relief which was supposed to come to them through the induction into popular favor of the automobile.

THE ANNUAL BANQUET of the Alumni Association of the New York-American Veterinary College took place April 3 at Reisenweber's, New York City, and was a most enjoyable affair. Dr. Wm. Herbert Lowe was toastmaster, and the speakers included Drs. Wm. J. Coates, Roscoe R. Bell, G. G. Van Mater, J. L. Robertson, R. W. Ellis, Wm. C. Miller, J. F. De Viue, W. Horace Hoskins, T. Earle Budd, and others. Counsellor Tompkins, of the University, and Dr. Munn, of the University Council, addressed the Association in happy vein, expressing their appreciation of the great record made by the "Old School."

DR. J. C. MCCOY, the Delaware breeder, had an article in a recent number of the *Horse Breeder* entitled "Chemistry of Breeding Trotters." It dealt with the food which such animals should receive, chiefly the soil upon which they are pastured and which grows their grain ration. He concludes his article with the following interesting observation: "At night grass is full of acid; on cloudy days it is acid; in the morning and evening it is neutral in reaction. At midday, with the sun pouring down its life-giving rays, all the grass is strongly alkaline. This is the time to cut hay—from 10 A. M. to 3 P. M. Cut hay on sunshiny days and toward midday; then cure it in the cock, to avoid acid fermentation in the barn, and you will have an article worth, as a food, double the ordinary hay of commerce."

REPORTS OF CASES.

"Careful observation makes a skillful practitioner, but his skill dies with him. By recording his observations, he adds to the knowledge of his profession, and assists by his facts in building up the solid edifice of pathological science."

OCULAR EPITHELIO-SARCOMA.

By A. T. KINSLEY, M. Sc., D. V. S., Kansas City, Mo.

Malignant tumors of the eye and adjacent structures are quite common in the horse and ox in this vicinity. The value of the animal is materially diminished by an ocular tumor. The vision is likely to be impaired and frequently lost. Even though the vision is not interfered with, an unsightly scar in the region of the eye is an objectionable blemish. Because of the diminished value of an animal affected with an ocular tumor and because of their frequency, practitioners have resorted to various therapeutic agents and surgical operations to relieve the affected animals.

The following cases are typical of ocular epithelio-sarcomata as observed in and around Kansas City.

Case 80.—A five-year-old Hereford cow was noticed to have a watery discharge from the left eye. The attendant thought it nothing serious and allowed her to remain in the feed lot. Some two weeks after the first symptoms appeared the discharge from the eye became purulent and some home remedies were applied, but there was no indication of relief and a veterinarian was called. Upon examination the cornea was found coated with a milk-white organized exudate and there was an occasional tubercular projection. The case was diagnosed as keratitis and prescribed for accordingly. The discharge practically ceased. The exudate disappeared, but the tubercular growths increased in size and they were removed with scissors, the cut surface being cauterized with lunar caustic. The tubercular growths reappeared in a few days and soon became fungiform. The entire cornea appeared to produce these rapidly-growing nodules, which later fused, forming a cauliflower growth that protruded outward between the lids. The new growth gradually increased in size and about two months after the first symptom appeared the entire eye with the attached new growth was removed by operation. The growth was confined entirely to the eyeball. It was gray in color, about the size of one-half of an English

walnut, and had invaded and replaced the aqueous humor. It was found by microscopic examination to be an epithelioma. The patient made a complete and rapid recovery.

Case 156.—A small wart-like growth was noticed near the external canthus of the upper eyelid of a six-year-old grade Hereford cow. The cow was sent to pasture with the remainder of the herd and not seen again by the owner for about six months, when he noticed the growth had increased in size. The cow was in poor condition and did not fatten in the feed lot. The growth in the eye rapidly increased in size, and vision was obstructed. Upon examination at this time (about ten months after the growth was first noticed) the growth was found to involve the conjunctiva of the upper lid, the corneal conjunctiva and to extend into the substance of the eyeball. The surface of the growth was necrotic and there was an ill-smelling



FIG. 1.

discharge. An operation was recommended and consented to by the owner. After preparing the field the tumor was dissected out as complete as possible, but metastatic growths were found in the soft structures in the posterior portions of the optic fossa and the prognosis given as unfavorable. The cow died about six weeks after the operation. Unfortunately the carcass was devoured by hogs and no post-mortem examination was made. Microscopically this tumor was found to be an epithelio-sarcoma. The epithelial nests are clearly outlined and the connective framework was becoming sarcomatous tissue (see Fig. 1).

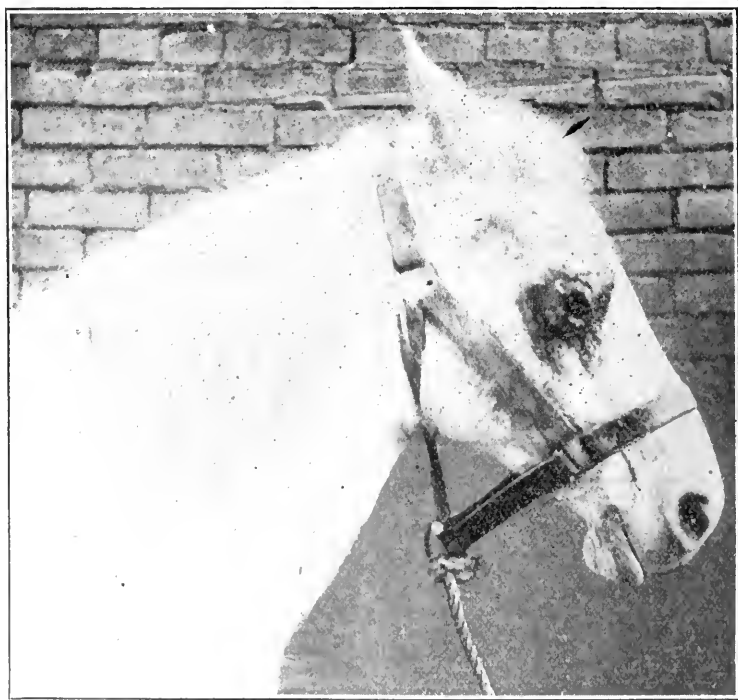


FIG. 2.

Case 210.—Fig. 2 illustrates the appearance of an aged gray gelding of common breed that was operated upon in the clinic of the Kansas City Veterinary College, November 1st, 1906. Practically no history was obtained. As is shown by the cut the entire corneal surface was involved as well as the conjunctival surface of the upper lid and the entire lower lid. The growth was quite soft and of a grayish color. The surface of the growth

was necrotic and very irregular. The liquefied necrotic tissue had a very offensive odor and produced erosion of the skin and subcutaneous tissue inferior to the eye, as shown in cut. The horse was in fair condition. The growth was provisionally diagnosed as an epithelio-sarcoma, the opinion being based upon previous similar cases. After cleansing and cocainizing the operative field the entire tumor and all the invaded tissues were dissected out. The entire mass removed weighed 20 ounces. It was not encapsulated, but permeated the adjacent structures and was quite

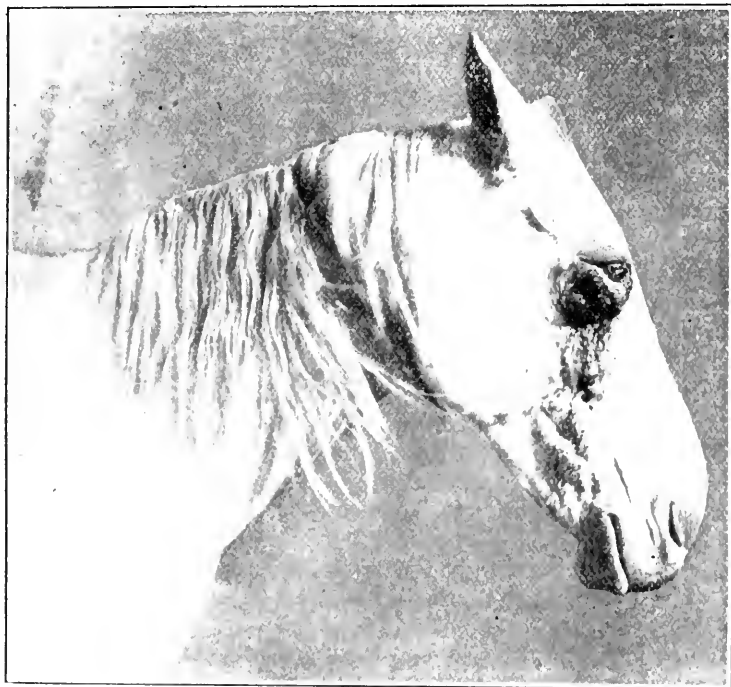


FIG. 3.

vascular. Microscopically the growth was found to be an epithelio-sarcoma practically identical to the one removed from Case 213. The horse was taken from the hospital about a week after the operation, at which time the wound was healing by granulation.

Case 213.—Fig. 3 was made from a photograph of an aged gray mare of common breed whose lower eyelid had been quite extensively lacerated by barb wire some 15 months previously. The

wire injury was rather slow in healing, and soon after it had apparently recovered small tubercular growths began to appear. The skin became necrotic and fungoid growths appeared, which gradually enlarged until vision was obstructed. The owner consented to have her operated upon and after the preparation of the operative field the growth was dissected out entire. It involved the lower lid and the membrana nictitans, weighed 18 ounces and was very vascular. The accompanying pen drawing, Fig. 4, illustrates

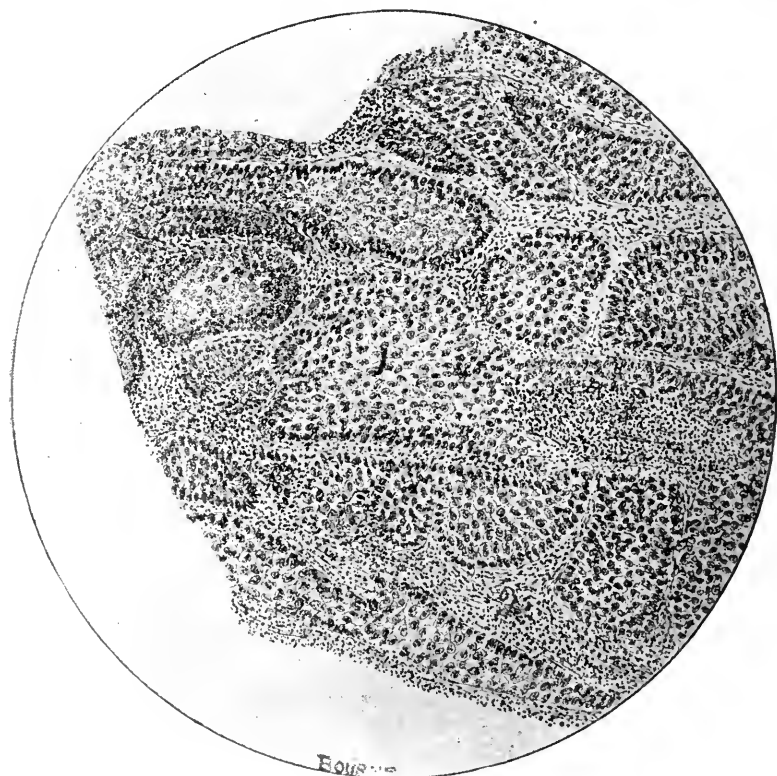


FIG. 4.

trates the microscopic appearance of the growth. The wound healed by granulation without leaving any material defect except obstruction of the naso-lachrymal duct.

These four cases are types of malignant tumors from which complete relief can be obtained if removed by operation before metastasis occurs.

Hereford cattle seem especially susceptible to ocular tumors,

but, so far as our observation has extended, all breeds of horses are equally susceptible.

AGGLUTINATION TEST FOR GLANDERS.*

By D. J. MANGAN, V. S., New York City.

The history, symptoms and termination of this case were so remarkably interesting that I thought it might be of some interest to the members of the Association to hear a recitation of the same.

The animal in question was a large bay horse, six and one-half years old, which was purchased with a number of other green horses last spring, and shortly afterward developed a severe attack of distemper, which after a very tedious course made a good recovery.

The animal worked every day, developing into a grand specimen of healthy horseflesh; in fact, he was the finest and best looking horse in the stable.

In this stable during the months of September and October several horses suffering with glanders had to be destroyed.

Having had the blood of two horses tested by the agglutination method, and liking the results very well, I decided to try the test myself. Therefore I selected two cases showing clinical symptoms of glanders, and then picked the above-mentioned bay horse as a healthy specimen for the purpose of comparison.

The blood of the three horses gave a positive reaction at 1-200, 1-500 and 1-800. These tests were completed on October 26th, 1906, and on that day, and for several succeeding days, in this bay horse no clinical symptoms of disease were manifested. The temperature, pulse and respirations were normal, and an excellent appetite present.

The two glandered horses were destroyed, and the bay horse was isolated and worked until Nov. 10th, 1906, when an œdema of the near hock was noticed, the temperature 102° F., and the enlargement looked like an injury.

On November 13th and 15th the entire stable of nineteen horses were tested by the agglutination method, and No. 7, the big bay horse here mentioned, was the only one showing a positive reaction at 1-200, 1-500 and 1-800. The animals remained isolated and continued at work. November 20th, 1906, noticed

* Presented to the February meeting of the Veterinary Medical Association of New York City.

a small swelling in front of the sheath, which appeared periodically; temperature taken daily now showed an intermittent fever, $100\frac{2}{3}^{\circ}$ to $102-103^{\circ}$ F; animal continued working; appetite good one day and poor the next, depending on the temperature, and a gradual loss of flesh was noticeable.

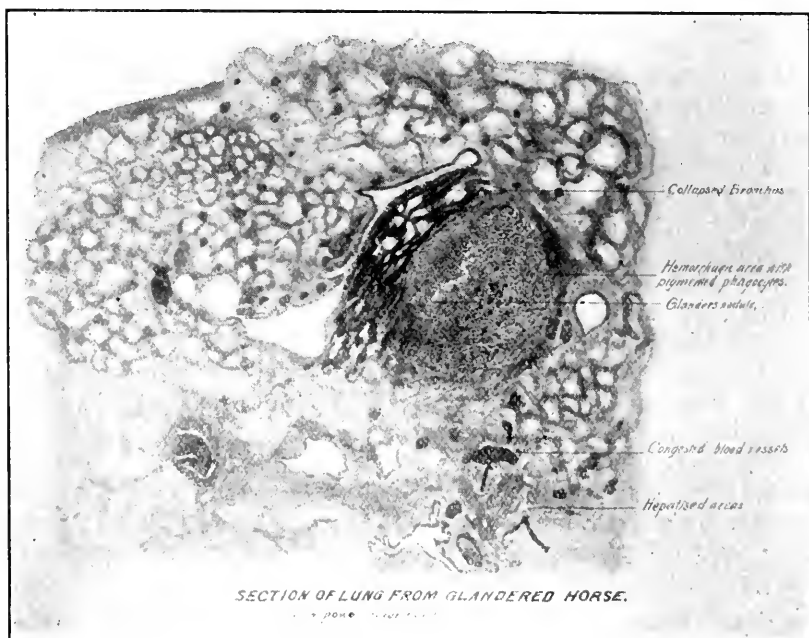
December 6, 1906, animal completely off feed; temperature 103° F., and continued so for a few weeks with slight variations.

Hyposulphite of soda was administered three times a day until temperature dropped to 100° F. on December 20th, 1906. December 21, 1906, temperature 100° F.; animal eating and feeling good. Mallein was injected into muscles of the left shoulder.

December 22, 1906, a large swelling present at the site of injection; temperature $104\frac{3}{5}^{\circ}$ F.; off feed and great prostration present. Very lame on near front leg; outside of the left hock broken down in two places.

Gradually effects of mallein subsided and animal was destroyed December 28th, 1906.

The post-mortem and pathological findings by Dr. W. Reid



Blair, which are here appended, are of considerable interest owing to the fact that at no time prior to the mallein injection were there any clinical manifestations of glanders present.

EXTERNAL EXAMINATION.

Subject:—A large bay horse, well nourished, weight 1360. Left shoulder and leg shows an extensive inflammatory œdema (result of mallein injection). Left hock is very much swollen. On the outside of this hock, about six inches apart, there are two well-defined farcy buds, both of which are discharging a thin straw-colored serum. At the ankle of the same limb a third farcy bud is developing. Intermaxillary lymphatic glands are not enlarged, nor are there any visible lesion upon the schneiderian membrane.

POST-MORTEM.

Gross Examination:—The animal is well nourished with an abundance of subcutaneous fat. The lymph nodes at the bifurcation of the trachea are enlarged and œdematous. The same is true of the lymph nodes of the brachial region.

Heart in systole and normal. Lungs are congested and pneumonic. The right lung shows considerable emphysema along its inferior border. By passing the hand along the surface of the lung there can be felt numerous shot-like nodules, all of which are deep-seated and not visible on the surface. On section of the lung these nodules are found to be about the size of small shot; many of them, however, are as large as a pea and several are found somewhat larger, about the size of a bean. The nodules are more numerous along the course of the bronchial tubes than elsewhere. A well-defined broncho-pneumonia is present throughout.

The stomach as well as the small and large intestines show no inflammatory changes. The liver, spleen and kidneys are slightly congested, but otherwise normal.

MICROSCOPIC EXAMINATION.

Sections of the lung show many areas of consolidation with the central bronchus collapsed or completely filled with mucus, fibrin, bronchial epithelium and broken down leucocytes. Many small glanderous tubercles are present in close proximity to, and involving the walls of the bronchioles; these cells form part of the exudate in the lumen of the bronchi.

Sections through the glanderous nodules, especially those of recent development, show them to be made up, for the most part, of leucocytes, surrounded by areas of intense congestion.

In the older and larger nodules, the centres show advanced necrosis densely surrounded by infiltrated leucocytes, large plasma cells, with many very large polynuclear cells. No characteristic giant cells are present. Some of the nodules show a slight amount of connective tissue encapsulation. This is, however, not well marked. The nodules show no calcification. Phagocytosis as seen in resolving pneumonia is well marked in this case. The phagocytic cells contain broken down red blood cells and coal dust pigment.

Anthraxis or coal dust pigment is uniformly scattered about the smaller bronchi. The broncho-pneumonia is apparently of some days' duration.

The lymph nodes which were removed from the bronchial region show on section inflammatory changes with a tendency toward degeneration and suppuration.

The sections of the heart, liver, and kidneys show no important changes from the normal.

The spleen is congested. The sections of the other organs show no changes of importance.

SUMMARY.

Judging from the histological development of the glanderous nodules, it would appear that the infection was not of many weeks' standing.

The question which occurs to me in connection with this case is this: Would a typical reaction have occurred if the animal had been subjected to the "mallein test" at the time the "agglutination test" was made? I will leave the discussion of this point to clinicians, who have had great experience with this disease, to decide.

REMOVAL OF EYE OF HORSE—FUNGUS HEMATODES.*

By W. W. TALBOTT, Oskaloosa, Iowa.

In the fall of 1905 a farmer stepped into my office and reported that he had a gray gelding, about 10 years old, and that there was a growth of some sort on one eyeball just a little below the pupil and toward the outer aspect of the eye near the lower lid. He said the growth was about the size of the end of a man's little finger, and black, and of a very rough and uneven surface. The sight was not at all impaired at this time,

* Presented to Iowa Veterinary Association, February, 1907.

but the eye discharged a thin, watery fluid much of the time, and the lachrymal duct seemed not to be able to carry away all of the flow of tears. The growth was then of about four months' standing. I suggested prescribing for the animal with a possible chance of saving the eye, but as is so often the case in the treatment of eye diseases, the owner was a little timid and hesitated to have anything done, but said he would wait a while and see what it was going to do, then see me later. Last April he came to me again, saying the growth was about the size of a walnut and getting larger; that it had covered the pupil of the eye, or mostly so, and that the horse was just about blind in that eye. I had not yet seen the horse, but from his description and what I had seen at our different State Association meetings, diagnosed the trouble as a "fungus hæmatodes," and told the owner that as the growth was continually spreading, and so large now, there would be no possible chance to save the horse or the eye without removing it; so after his ascertaining the cost of the operation and treating the wound, he decided to sell the horse and let the other man bear the expense. In a week or two the horse was sold at a sale for \$15. The new owner of the horse kept a stallion at the barn I used for a hospital, and was a man who thought he could do a great deal in the veterinary line himself, especially with his own horses. So after two and a half months' trial with his own treatment on this growth, and arguing with me during this time to no avail, he decided to have me remove the eyeball. So on July 20, 1906, I removed the eye, the preparation for the operation being made in about one hour. The instruments used were curved, blunt-pointed scissors, probe-pointed bistoury, probe-pointed tenaculum, two pairs forceps and needle and thread. The instruments were sterilized by boiling. The restraint of the animal used was merely to back the horse into a large stall and place a plank along his side, a twitch on the nose and cocainization of the seat of operation. I used 3 ss. of 5 per cent. solution of cocaine injected into the muscles and tissues surrounding the eyeball and growth. This worked very nicely as a perfect local anæsthetic and was sufficient to last during the entire operation, which was about one hour. The use of the needle and thread was to run a stitch through the edge of each upper and lower eyelid, drawing the same apart by tying above and below to the halter to keep them off the growth. The next step was to proceed to the operation proper, while the owner held the twitch, with the necessary

antiseptic precautions. This was done by severing the muscles which surrounded the eyeball by the use of scissors and probe-pointed bistoury. The operation seemed to be practically painless until the optic nerve was reached, but in severing this the patient made two quick side jerks of the head; afterwards was quiet. There was very little hæmorrhage during the operation.

After-Treatment of the Wound.—This consisted first, immediately after removal of the eye, to thoroughly irrigate the cavity with a solution of eucalyptolin, and then pack the cavity with moist gauze saturated in 5 per cent. iodoform. Then bandage over the wound to keep away the flies and dust. This form of treatment was repeated once daily for four or five days, then once every two or three days for two weeks. After that I merely used an antiseptic injection into the cavity once a week for three or four times. The wound healed rapidly by granulation and nearly filled the cavity. The entire growth was apparently removed with the eye, as there has been no sign of the fungus growing again up to the present time, and the horse is working every day. This fall the owner sold the horse for \$50.

RUPTURES OF THE DIAPHRAGM.*

By S. K. HAZELET, Oelwein, Iowa.

Rupture of the diaphragm is not thought to be a very common occurrence before death, but it does sometimes occur, and is not at all uncommon after death, owing to pressure of the intestines distended with gases evolved after death.

Case I.—I was called about 1.30 P. M. to see a large draught gelding. History: The horse had been turned in the lot near the barn about 8 A. M. He began to run and play and attempted to jump the fence. In so doing he fell, but got up apparently all right. About 12 M. began to show symptoms of great abdominal pain. Would paw, lie down, and get up very often; distressed breathing and general disturbance. At times, when he would start to get up, he would sit up on his haunches like a dog. I suspected some internal injury from the fall, but hardly thought there would be rupture of the stomach or diaphragm, as there was apparently no distension with gas. After two or three treatments he became more quiet. Twenty-four hours later it was very apparent he would not get well. As

*Presented to meeting of the Iowa Veterinary Association, Feb., 1907.

the owner did not want to see him suffer, he asked to have him destroyed, which was done. On making a post-mortem, a knuckle of intestine was found extending through an opening in the diaphragm into the thoracic cavity.

Case II.—I was called about 10.30 A. M. to see a three-year-old colt. History: He had been turned in the yard with other horses about 6 A. M. He had eaten his morning feed and had appeared all right until about 10 A. M., when he began to show symptoms of violent abdominal pain. I arrived about half an hour later. He was pawing, striking, rolling, and kicking—giving evidence of the greatest pain. I suspected that this animal had received an irritant of some kind, but there was no way of learning what it could be. The treatment given was morphine and atropine hypodermically, and oleaginous purgatives. He became somewhat more quiet for a time, but about 4 A. M., on the following morning, he grew rapidly worse and died. On post-mortem it was found that quite a long loop of intestine was extending through a comparatively small hole in the diaphragm. After the animal had died, the owner remembered that he had seen one of the older horses get the colt in the corner of the yard and kick it. The loop of the bowel that extended through into the thoracic cavity was terribly inflamed. There was no evidence of external injury. These two cases of diaphragmatic hernia occurred before death with no gas formation to amount to anything.

Case III.—I was called to see a draught gelding that had been sick probably 24 hours before I was called. The owner said he had been pawing, sweating, and rolling. When I first saw him he would stand quiet part of the time, would paw occasionally, and lie down for a little while at a time. He was somewhat distended with gas, and the contents of his stomach were coming from his nostrils. There was great depression and uneasiness. A patch of perspiration was constantly present on the skin opposite the diaphragm on one side. My diagnosis was rupture of the diaphragm.

Prognosis unfavorable. He had been given some treatment before I saw him, and I gave him some more, thinking I might be mistaken in my diagnosis. I made but one trip to see him.

The owner reported that the horse had died about 12 hours after I had left him. I did not have an opportunity to post this horse, but the owner said he opened him and found the diaphragm ruptured.

ANOTHER DISLOCATION OF THE CERVICAL VERTEBRÆ.

By E. F. SANFORD, D. V. S., Baltimore, Md.

The case under the head of "Partial Dislocation of the Cervical Vertebrae," reported by Dr. W. J. Martin, of Kankakee, Ill., in the February number of the AMERICAN VETERINARY REVIEW, interested me very much, for just previous to that time a similar case came under my observation.

Sunday morning, January 20th, 1907, I received a telephone call from the stable superintendent of the Monumental Brewing Co.'s stable to "come there at once to see a horse with a broken neck." On my arrival I found an aged brown gelding with the following history: The night watchman had found the animal down in his stall at 4 A. M., with the off hind foot caught in the halter chain and struggling violently to get up. Securing help, the animal was pulled out into the aisle, but was unable to rise. A sling was procured and the patient raised.

On my arrival I found him in this position; he was very unsteady on his feet, head hanging low, almost touching floor, and his neck (the seat of trouble) presented a very peculiar appearance, being very sharply inclined to the right; quite a little swelling had taken place, showing he had been down sometime. Upon a close examination no crepitation nor symptoms of fracture could be detected, but there was surely a dislocation of the "cervical vertebrae" between the fourth and fifth bones.

With the help of several able-bodied brewery workers I tried all methods known to me to "straighten things out," but my efforts were in vain; so I decided to let the poor animal rest. In about four hours, with Dr. William Dougherty, I visited the patient again, and found him in about the same condition. He was now taken out of the sling, and although his gait was rather unsteady, we had very little difficulty in moving him to another stable, a short distance away. He was again put in slings and given a drink of water and some hay, which he seemed to relish. The next day he refused to stand, and was taken out of sling and allowed to lie down, but had no difficulty in getting up. He gradually improved; appetite remained good, not missing a meal; swelling slowly subsided, and although a distinct curvature remains, that is the only sign left of the accident. On February 12 he began to get slow exercise, and at this writing is doing good (or what some call very bad) work, delivering the extract of hops to thirsty Baltimoreans.

A TAILLESS CALF.



W. O. Kemp, V. S., Key West, Florida, sends the accompanying photo of a calf which is minus all coccygeal vertebrae. Not content with this departure from normal conditions, the little animal has gotten its sex mixed, for while it has testicles, it also has a vagina and vulva. As no penis is visible, and no semblance of a sheath, it partakes more of the characters of a heifer.

ARMY VETERINARY DEPARTMENT.

CAVALRY AT THE JAMESTOWN EXPOSITION.

Robert J. Foster, D. V. M., Veterinarian 12th Cavalry, Fort Oglethorpe, Dodge, Ga., has been ordered to accompany the Second Squadron of the 12th Cavalry for station at the Jamestown Exposition, Norfolk, Va., where it will remain from April 26 to Dec. 1. This squadron will be the only Cavalry stationed there in the regular army encampment. Dr. Foster will be pleased to show visiting veterinarians the character of the army veterinary service.

* * *

ARMY PERSONALS.

DR. JOHN TEMPANY, Fort Riley, Kan., has been ordered to Seattle, Wash., as inspector of forage and horses.

DR. GERALD E. GRIFFIN, Vet. Artil. Corps, has been ordered from Fort Sheridan, Ill., to Camp Columbia, Havana, Cuba.

THERE are many more mules in Boston than in any other city in the country, there being at the beginning of this year 10,213, while the next largest number is in New Orleans, with only 3,907, followed by St. Louis with 2,898 and Kansas City with 2,367.

SURGICAL ITEMS.

BY DRs. L. A. AND EDWARD MERILLAT, CHICAGO, ILL.

THROMBOSIS OF THE ILIAC ARTERIES OF THE HORSE.*

BY PROF. UDRISKI.

(Concluded from Page 97.)

Prof. Gratia published a case he observed personally in a three-year-old mare that remained a short time in the hospital of the veterinary school during the vacation period. This animal had been sick for a long while. Her health altered insensibly and progressively into marasmus and at the same time she presented symptoms of intermittent lamenesses in the hind extremities. Although there was no opportunity for an extended observation a diagnosis of thrombosis of the aortic quadrifurcation was made by his colleague on the first visit and it was afterwards confirmed by a rectal exploration.

The autopsy was interesting:—Tubercular lesions were found in the two great splanchnic cavities, in addition to multiple thromboses of the abdominal arteries and veins, especially in the aorta and the portal vein. The trunks of the vessels and also many of their branches contained coagula of variable ages, most of them old.

Thrombosis of the portal vein is an exceptional pathological process both in the horse and in man, although Cabaret, a French veterinarian, cites the case of a five-year-old horse with symptoms of chronic enteritis and progressive emaciation, which on post-mortem presented thromboses of the great mesenteric vein and of the trunk of the portal vein; and Reynal, in 1838, described a parallel case which was reported to the Academy of Medicine in Paris, by H. Bouley. In a special study of *eleven observations* of thrombosis of the posterior aorta, Gauthaux twice found pylethrombosis associated with arterial lesions. The *sixth observation* mentions a co-existence of aortic thrombosis and pylethrombosis, in a nine-year-old horse, that in addition to locomotory troubles in the hindquarters, manifested symptoms of chronic enteritis with icterus and a state of cachexia. In the *eighth observation* he describes an aortic thrombus with an old thrombosis of the splenic and portal

veins. But the most important work on the subject is that of Prof. Colin, of Alfort, containing clinical observations and experimental researches on the obliteration of the portal vein of animals, considered from the triple point of view of the effects (1) on the digestive organs, (2) on the abdominal circulation and (3) on the biliary secretion.

Prof. Marek says that infarcation from obliteration of arteries is produced by collateral arterial fluxion and not by venous reflux, which is to say, that the formation of this lesion in all cases, without regard for the determining cause, is always an arterial or venous obturation.

The arterial lesions are diffused in the horse, which explains the greater relative urgency of thromboses implicating the portal system and mesenteric arteries, in the horse than in the human being. This filiation is evident in the observations of Prof. Gratia, because the arterial coagula were older than the venous ones.

Thromboses of the ileo-cæcal arteries may be produced by the larvæ of *sclerostoma*; by insufficient "vis-a-tergo" (invoked in the etiology of pylethrombosis, by Prof. Gratia); by the very probable action of tubercles situated in the walls of the vessels of the liver and spleen; by insufficiency of a dilated heart and by tuberculosis of the pericardium. And must one also invoke the intervention of fibrin-ferment formed in aneurysmal thromboses of the mesenteric arteries whose coagulant action might be reflected as far as the stagnant blood of the portal vein? This is a point upon which one cannot decide.

What may become of the coagulum? It may take any one of the following modifications:—(1) resorption; (2) organization; (3) softening; and may produce either one or the other of the following results:—(1) the production of collateral circulation sufficient to reëstablish the functional integrity of all the parts; (2) obstruction more and more complete until all of the circulation of the posterior extremities ceases; and (3) it may maintain a certain condition of partial obturation.

The resorption of the coagulum with reëstablishment of the blood current would be the most favorable termination, but unfortunately there is little change of this supervening, because, in supposing that this is possible, the results obtained would not be permanent until the primary cause is dispatched.

It may be truthfully said that troubles due to alterations in the *composition* or the *flow* of the blood are extremely rare. The formation of coagula in the arteries should instead be

attributed to *alterations in the vessels*, especially to *endoarteritis*. It is not our intention here to search for etiologic conditions capable of breaching the internal membrane sufficiently to cause the formation of fibrogenic ferment with consecutive precipitation of fibrin. The excellent works of Hayem, of Weigert and of Fredericq have contributed much to the elucidation of this interesting question. Microbes or irritant toxins are capable of wounding the endothelium of the endoartery and of becoming indirect factors in the coagulation of blood in the affected vessels, and it is well known that alterations of the endothelium of arteries regenerate meagrely. It is then understood that if the possibility of resorption of the coagulum is admitted, that a new one will form;—the condition which provoked the original continuing to exist in the aorta. In considering the second hypothesis, regarding the organization of the coagulum, two results may be produced: (1) When the lesions progressed rapidly, without the collateral circulation having had time to establish itself, terminating in phenomena of gangrene from anæmia; and (2) when the blood current is sufficient to maintain a partial or integral functional activity of the hind-quarters. A view of the method by which intravascular coagula become organized, elucidates the gravity of the process. According to the most recent researches, it is not the coagulum that organizes. The term "organizes" should not be conserved, unless because it has been consecrated by usage. The coagulum undergoes granulo-fatty degeneration, becomes detached from the vessel, and is replaced with a new-formed mass of connective tissue, a product of the activity of the endothelial cells, which being inflamed, swell, and soon constitute a layer of embryonic elements. While the endothelium undergoes this transformation, the middle and external coats of the artery, in turn, take part in the process. Their capillaries anastomose with the new ones of the internal coat and the fibro-vascular granulation siezes the coagulum. This latter process is effected more easily if the coagulum is intimately related to the plane of the endothelial layer. Later the coagulum detaches and soon disappears entirely to make way for the connective neoformation, which completely substitutes it. The course may be different if the endothelial coat is totally destroyed or raised with the coagulum. The middle and the external coats then form the new tissue alone. As a rule, the future organization of the coagulum is not an effectual transformation. The fibrinous coagulum is replaced with new-formed connective

tissue that would cause a definite and integral obliteration of the vessel if the proliferation was active enough to effect a complete coalescence of the numerous granulations around the whole contour of the vessel. The process is generally incomplete. Very active at certain points, it is insufficient at others, and the connective mass remains perforated with a more or less large orifice from one end to the other and still permits the passage of blood.

The hope of establishing a collateral circulation sufficient to supply the posterior extremities is slight, owing to the large calibre of the obliterated vessels and the great quantities of blood required to supply the extremities. Supplementary circulation would only be possible through the following vessels:

1. By the anterior abdominal arteries and the inferior branches of the intercostals which anastomose with the posterior abdominal arteries from the prepubian, a branch of the femoral.

2. By the large posterior muscular artery of the thigh, which communicates with the obturator, a branch of the internal iliac.

3. By the median spinal artery, which communicates with the ascending branches of the subsacral.

Softening of the coagulum.—This transformation may occur in the centre of the coagulum with asepsis; it may extend more and more through the whole mass, or it may arrest at a given point, leaving a canal through the centre. The danger consists of the separation of small fragments which could be carried some distance and cause embolic foci. Septic softening is less probable. The coagulum would become infected through the endogenic route when a neighboring septic process was transmitted to it. But the animal affected presents external signs of perfect health.

In the case which is the object of this discussion, the lesion was considered incurable, and the subsequent course proved this to be true. The animal was killed, and the autopsy revealed the following lesions:

The aorta contained an enormous coagulum of hard consistency, of yellowish-red color, and adherent to the arterial wall over its whole contour. It was shaped like a projectile with the point directed forward. The surface of the coagulum was granular, and detached with difficulty from the artery whose internal coat, deprived of its endothelium, was rough. Posteriorly, the coagulum continued into the iliac arteries as much in the internal as in the external. The arteries were transformed

into plain cords, through which all circulation was impossible. Figure 5 shows in the stretched aorta a coagulum of almost classical form. The muscles of the hindquarters were of normal texture throughout (Prof. Hendrickx).

H. Bouley showed for the first time the relations which exist between the intermittent lamenesses and the thrombotic iliac arteries. Later, Charcot, inspired by Bouley's observations, while studying the phenomena in a human subject, called it "*ischemic intermittent claudication*."

The theories on blood coagulation are well known. Denis (of Commercy), by a special process extracted an unstable proteid substance (plasmine) from blood serum that divides spontaneously into two bodies—concrete fibrin and dissolved fibrin. Schmidt (of Dorpat) isolated a fibrogenic substance and a fibrinoplastic substance, the combination of which caused a fibrinous coagulum. Later this author modified his theory and admitted that the coagulation of blood is due to the separation of the fibrogenic substance by a ferment of the fibrin. Hayem and Bizzorero thought that the coagulation of the blood is due to an alteration of the hematoblasts or the "blood-plates of Bizzorero;" and finally the salts of lime play an important rôle in the coagulation of blood.

In his day, Cruveihier maintained that the intravenous coagulations in the phlegmasia, *alba-dolens*, is due to an inflammation of the vessel; in other words, the process depends upon an alteration of the walls of the vessel. A strong adversary of Cruveihier was Virchow, who, after several years, proposed another theory, based upon the following principle:—"The coagulation of blood, especially in marantic thromboses, depends upon the cessation or better the inactivity of the peripheric circulation; the heart diminishes in strength and the blood circulates less rapidly in the arteries; whence originates a blood stasis which is the principal cause of spontaneous coagulation within the vessels."

Zahn demonstrated that thrombosis nearly always developed in vessels whose endothelium was previously altered. Glenard, taking an experience begun by Brucke, applied a double ligature on a vascular segment in an aseptic manner and found that the blood conserved therein although completely still, did not coagulate, which fact leads to the conclusion that blood stasis alone is not sufficient to produce coagulation and that alterations in the wall is instead the origin. The cause of the alteration of the endothelium is microbic or toxic, and the co-

agulum may be red, white or mixed according as to whether it is composed of all the elements of blood, of the white corpuscles alone or only the red ones.

Thrombosis may obliterate the vessel completely or incompletely. The treatment of thrombosis of the iliac arteries varies with the state of the coagulum. At the beginning, absolute rest is essential to prevent the coagulum from breaking up into fragments and thus cause emboli. During the period of transformation, that is to say in the fibrous state, Poenaru recommends resolvents, but in almost all cases, not to say in all of them, treatment is ineffectual, illusionary.

* * *

ANNOTATION.

The above article, as mentioned in the title page and which appeared in French in the December (1906) number of the *Arhiva Veterinara*, published by the faculty of the Veterinary Medical High School of Bucharest, Roumania, is of more than usual interest to all practitioners of veterinary medicine, many of whom during their lives have occasionally, if not frequently, encountered analogous cases, in various stages of development, without having been able to satisfactorily explain the interesting phenomena attending them. Seizures of collapse of the hindquarters, coming regularly with a given amount of exercise, which may vary from a mere walk of several blocks to a fast run or trot of a mile, according to the degree of obliteration of the iliac vessels, are seen often enough in veterinary practice amongst horses, to have excited an earlier investigation of their causes. True enough, perhaps, these cases have been correctly interpreted by some for years, but the most of us, until very recently, have failed to properly diagnose them. They were looked upon as unusual, freakish derangements that defied explanation. Later, the disclosure of their nature by our European colleagues, and that only a few years ago, opened our eyes to the logical solution of the enigma for the first time, but this knowledge was slow to diffuse, many of us still remaining unenlightened.

That *thrombosis of the iliacs* deserves to be classified amongst the special definite diseases of solipeds, is incontrovertible; and, furthermore, it may also be claimed that the disease is by no means as uncommon as it is at the present time supposed. Reflections into the past bring recollections of more than a few of them, and since understood they are recognized here and there with

great regularity. Running horses, trotters, hunters, coach horses and even the grades are equally susceptible according to our own observations. It does not respect breeds nor classes, and is always a distinct, clinical entity with manifestations that vary only in the degree of intensity and duration. Its manifestations consist of sudden seizure of lameness (sometimes amounting to total collapse) of one or both hind legs, occurring during more or less exercise, in horses of good general health and vigor while at rest. A given amount of exercise will provoke a given amount of collapse, as Prof. Udriski says, "with mathematical precision." The seizures are accompanied with profuse sudation, tremors, dilated nostrils, accelerated respirations and other symptoms of pain and distress, all of which, together with the lameness, disappear as rapidly as they had developed, leaving the animal in an apparent perfect state of health, ready to fall with another attack of precisely the same kind, as soon as enough exercise is forced upon it. The rectal explorations may reveal a pulseless state of one or more of the iliac arteries and a hardness and enlargement of the aortic quadrification, but sometimes this palpation fails to disclose any *perceptible* diminution of the blood current of these vessels. The obturation being incomplete, it may be impossible by palpation to decide that thrombosis really exists. In this event and, in fact, in all cases, the clinical symptoms are sufficiently characteristic to make a diagnosis without reservation. It cannot be mistaken for any other disease, once properly investigated. Any given seizure may easily be mistaken for azoturia, at first, but a better examination soon excludes that disease. At the present moment we have a typical case under surveillance which answers to all of the features of the first case described by our Roumanian colleague. The horse, a common bay driver, sixteen hands high, weighing about eleven hundred pounds, about four months ago began to lag on his drives, tiring more easily than formerly. Later, or about three months ago, on a certain day, after a drive of several miles he showed symptoms of distress in the hindquarters, refusing to move farther even when urged with sharp raps of the whip. The hind legs were stiff, sudation was abundant anteriorly, the respirations were accelerated, and finally a pronounced lameness appeared in the right hind leg. The driver, an experienced horseman, thinking the animal was suffering from azoturia, dragged him with some difficulty into a convenient stable and then called a veterinarian, who upon arrival an hour later found

the horse in perfect condition with the exception of an almost imperceptible stiffness of the hind legs. The spell was over. Without making a diagnosis, except that of suspecting azoturia, he administered an aloetic ball and advised two days of rest. At the end of two days he was hitched in the wagon to be taken home, and although driving briskly and freely at first, soon lagged and then was seized with another attack more severe than the first one. This time he fell and was unable to rise. A convenient veterinarian, called to administer treatment upon the street, pronounced the case one of azoturia and ordered an ambulance. But this convoy was unnecessary, for when it arrived upon the scene the horse was up and apparently able to walk any distance unaided. In fact, he was standing up and was so well that he resented the proffered assistance by refusing to go into the ambulance, despite the combined efforts of the ambulance crew, who, after asking, "what fool doctor thought *that* horse needed an ambulance," drove off in disgust. The doctor, still confident that his treatment had effected a marvelous cure, led the patient to a neighboring stable and prescribed more physic and more rest. Henceforth these seizures recurred with such regularity after each brisk drive of two or three miles, that the horse was abandoned and traded to a horse dealer, who sold him a number of times, each time buying him back for half the sale price. Finally, however, the disease accentuated to the point of unfitting him even for this nefarious traffic; the seizures would occur when trotted about at the halter. The horse is now under the treatment of an unsuspecting veterinarian, whose kind permission to make a rectal exploration we obtained after some persuasive arguments. Confident that the treatment will effect a cure, a post-mortem examination was denied us.

The rectal exploration revealed an exceptional thrombotic state. The iliacs, external and internal, are obturated and exist only as indistinct cords. Only indistinct pulsations are perceptible in each of the external iliacs; the internals seem perfectly dead. The quadrification is a hard, ovoid mass, slightly compressible, pulsating, and somewhat painful. The legs are warm enough, but no pulsation can be felt in them at any point. The horse is now in only fair health, and is evidently waning under the combined influence of the disease, poor stable care, and a course of harmful internal medication.

This case is selected here because it is characteristic, "diagnosable" by palpation, ante-mortem, and is exceptionally rapid in its course. The following one, on the contrary, although

perfectly characteristic clinically, had a slow evolution to a certain point of partial obliteration of all the iliac arteries, and then remained much the same for years, without impairing the general health or changing materially as regards the character of the seizures.

The subject was an exceptionally speedy thoroughbred gelding. As a three-year-old he won so many creditable races that he was sold for \$10,000 before he had reached the age of four years. While being trained, in his four-year-old form, he was noticed to "pull up" quite lame in the right leg after "stiff breezing" of a mile. But the lameness was transient; it disappeared as mysteriously as it came, after some minutes of rest or walking. He could be jogged or galloped slowly, mile after mile with impunity, but each *fast mile* brought out the lameness with amazing regularity. A number of experts on "equine claudication" were consulted, each giving a different diagnosis. One of them blistered the stifle; another, the hock; another one applied a liniment to the hip; and still another one found a lesion of the sesamoids. After each of these treatments which, of course, were followed with variable periods of rest, and after the horse was submitted to the usual preliminary training, the very first attempt at real speed for a mile provoked the same symptoms.

This same condition prevailed during the succeeding two years, changing gradually for the worse. At first a run of three quarters of a mile would produce a seizure, then one-half a mile and finally when the horse was six years old—at the time of our first examination—the seizures came on precisely at the end of the first quarter.

This anamnesis alone, which was related to us before the examination began, seemed sufficient to distinguish the patient as a characteristic thrombotic subject. Only a rectal exploration would have been needed to confirm the suspicion, but as the interesting history, as regards the striking uniformity of the amount of exercise required to precipitate a seizure, excited our curiosity, it was decided to submit the patient to a series of confirming tests. The horse was taken to the track mounted with a hundred pound stable boy and made to jog a mile. When pulled up, nothing abnormal was noticeable. There was no distress, no perspiration, no lameness. Orders were then given to trot a second mile more briskly. The results were again negative, except that a slight perspiration had broken out about the neck and shoulders and that there was a slight tendency to lag

instead of responding sharply to the spurs. The rider was now directed to jog leisurely to the quarter-mile-post and then gallop back at full speed. The first furlong was covered briskly enough, but during the next one the patient began gradually to slacken its speed more and more until a pronounced lameness appeared in the right hind leg. On reaching the end of the run (one quarter of a mile) he could scarcely have limped farther; the right hind leg collapsed with each step, reminding one of crural paralysis or acute azoturia; the whole body trembled from the distressing pain; the whole fore part of the body was soaked in sweat; the nostrils were extremely dilated; and the eyes were staring. Dismounted, he refused to stand quiet, held the head near the ground, circled around and attempted to lie down, still limping, sweating and breathing heavily. After five minutes these symptoms began to gradually diminish in intensity and in ten minutes they had vanished entirely with the exception of an almost unnoticeable dragging of the affected leg. In fifteen minutes everything was perfectly normal. Two hours later the experiment was repeated with the same results. That is, the same amount of exercise (one quarter of a mile) precipitated an attack of the same intensity and duration.

The rectal exploration, made immediately after the patient had been taken to the stable, after the second test run, revealed an extraordinary state of affairs at and around the aortic quadrification. The end of the aorta was slightly enlarged posteriorly, gradually diminishing in size three to four inches anteriorly, where the vessel retained its normal calibre. The right external and the right internal iliac arteries were hard, cordiform, and almost but not entirely pulseless. The left iliac arteries, external and internal, were thought to be normal, but the subsequent post-mortem proved that the comparative palpation had been deceiving. The pulsations were exceedingly distinct in these latter vessels, despite the fact that post-mortem they were found almost completely filled with a connective tissue plug as far down their course as they were examined.

In a general examination of the patient, it was found that the general health was exceptionally good. The coat was bright, glistening, and smooth; the appetite was good; the bowels were regular; the pulse, the rectal temperature, and the respirations were normal and the condition of flesh was that of a perfect horse.

Examination of the hind legs during the seizure disclosed nothing abnormal except the difficulty of finding any pulsations

in the metatarsal arteries and the absence of sudation to harmonize with the sweating on the anterior part of the body. The pulsations of the vessels in the legs were decidedly feeble, both while at rest and during the attack, but there was no perceptible coldness nor diminished sensibility anywhere.

When the exact nature of the affliction was disclosed to the owners, consent to kill him for examination post-mortem was given forthwith. The three years of ineffectual treatment had prepared them for the ordeal. In order to avoid publicity we were requested to slaughter the animal and make our autopsy at night, which unfortunate circumstance rendered careful dissection of the region difficult. With only a tallow candle as a light and that frequently being extinguished by the wind, and with a misconception of the exact extent of the lesion from the rectal exploration, a more extensive and accurate dissection of the specimen would have been quite impossible. By opening the abdominal cavity, ridding it of its contents and then breaking the uppermost leg over the body by dividing the coxofemoral ligaments, the affected region was rendered accessible. The left external iliac artery, then thought to be free from disease, was immediately sacrificed (Figs. 7 and 8). Only the other three trunks were dissected. The subsequent revelations, however, show this conclusion to have been erroneous, as the specimen clearly indicates that this vessel also was incompletely obturated (b, Fig. 7). The thrombus was found to extend downward into all the iliacs, although through this error only three are shown in the accompanying figures. The obstructing coagulum, now transformed into well-organized connective tissue, was found to extend three inches forward from the quadrification, terminating in a pointed end, like a cartridge in the breech of a rifle. At the quadrification it was quite firmly adhered to the intima, but was removable by tearing. In front of the quadrification it was easily separated, while in the iliacs it was fused, interwoven with the vessels' walls in a manner that defied separation.

A cursory examination of the specimen would leave the impression that the lumina of the vessels were totally obliterated. After splitting it open, however, it was seen to be channelled here and there—sometimes in the centre, sometimes along the wall—sufficiently to permit the passage of a limited amount of blood.

Analogous cases have recently been observed by Quitman, Hughes, Newell, and Welch.

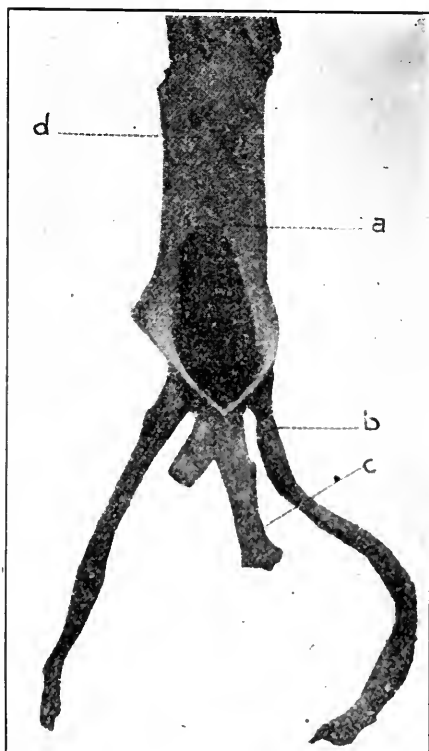


FIG. 6.

- (d) Aorta split open.
- (a) Anterior end of thrombus.
- (b) External iliac artery.
- (c) Internal iliac artery.

The cause of this interesting lesion must be sought in the study of thrombosis in general, but the special cause of this particular thrombosis will probably never be determined. Various theories on the etiology of coagulation of blood within the vessels will fit the situation, but actual proofs that any of these theories will apply to any particular case of iliac thrombosis will always be lacking. Prof. Udriski, without committing himself, hints at its probable *tuberculous origin* by citing a case of thrombosis of the intestinal vessels in a tuberculous horse. The action of *microorganisms*, or their metabolic products on the endothelium of bloodvessels, is known to sometimes cause a starting point for such a coagulum. *Entozoa* are known to penetrate the vessels and flow as emboli with the blood current

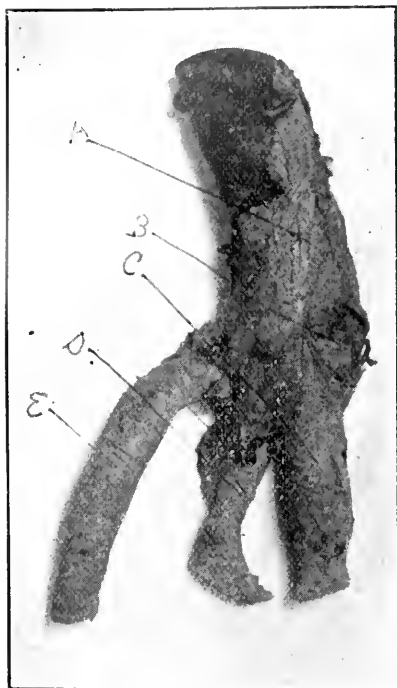


FIG. 7. THROMBOTIC AORTA AND ILIAC ARTERIES.

(a) Aorta. (b) Stump of left external iliac artery. (c) Left internal iliac artery. (d) Right internal iliac artery. (e) Right external iliac artery.



FIG. 8. THE SAME SPECIMEN SPLIT OPEN.

(a) Anterior pointed end of the thrombus. (b) Body of the thrombus. (c, d, e) Thrombotic arteries split open.

to remote points, where they promote the evolution of thrombi. They also breach the endothelium at the seat of penetration, and thus leave a favorable condition for the beginning of a coagulum, which becoming fragmented, flows to other parts with the same results. Finally, any lesion, from whatever cause, that breaches the smooth pavement of the intima, may become the starting point of a formidable, growing coagulum, which upon becoming transformed into firm connective tissue, more or less effectually obliterates the lumen of the vessel. To all of these we will add the theory of *physical injury*. The end of the aorta might be compared to the end of a mill-race, where the slow-flowing current, suddenly obstructed, rushes with force through the power-wheels. The quadrification of the aorta of solipeds is an unusual mechanism in regard to the abruptness of its termination. Compared with the usual divergence of arteries by series of bifurcations more or less separated from each

other, this divergence stands alone. The consequence of this arrangement is the violent rush of blood in four directions at each pulsation, which in turn must eventually have a telling effect on the endothelium. In short, the constant rush wears the endothelium faster than its meagre reproductive powers can repair it. The bacterial theory, the entozoa theory, and the embolus theory, reasonable enough in the case of many other localizations, are not as reasonable in the case of this thrombosis, because this aortic quadrification is not a favorable location for the lodgment of anything. Flowing objects, including bacteria, would be washed away from this turbulent focus. Certainly the conditions would not be favorable for their localization.

EXAMINATION FOR MILK AND MEAT INSPECTOR.—The Bridgeport, Conn., Board of Health conducted a competitive examination for this position last month, two of its progressive veterinarians—Drs. Edward Birmingham and Carlton A. Knapp—taking it. In the account which the REVIEW received, it was not stated who the successful candidate was, but the following were the questions submitted, and they may serve to give an idea of the scope of similar examinations: 1. Explain Physiology of Gastric Digestion. (a) Why does the stomach not digest itself? (b) What do you understand by enzymes? 2. Describe the circulation of the blood. (a) Name the varieties of leucocytes. 3. What do you understand by the term bacteria? (a) Name some of the characteristics. (b) How are they classified? (c) Name the varieties. (d) What are anærobic bacteria? 4. Explain the terms Immunity and Infection. 5. Give the composition of milk. (a) State the physical appearance of good milk. (b) Name the chemicals used to preserve milk. (c) Give the means of detecting such chemicals. (d) What changes are produced in milk by sterilization? (e) Name the diseases that may be caused by infected milk. (f) How do typhoid bacilli find their entrance into milk? (g) Give short account of lactic fermentation. (h) Cite some method that in your judgment should govern the care, sale and examination of milk. 6. How do you account for the various colors which milk sometimes assumes? 7. State the characteristic appearance of good meat. (a) At what age or weight would you consider meat of calves, lambs or pigs edible? (b) How would you identify horse meat. 8. Give clinical symptoms of tuberculosis in cattle. 9. Give short account of apthous fever. 10. Give an account of the mallein test.

ABSTRACTS FROM EXCHANGES.

ENGLISH REVIEW.

By PROF. A. LIAUTARD, M. D., V. M.

NECROSIS OF ONE TURBINATED BONE IN A MARE [*Prof. J. J. O'Connor, M. R. C. V. S.*].—A six-year-old mare is unfit for work on account of a foul nasal discharge from the right nostril. The breathing is very loud and there is an enlargement of the lower extremity of the right anterior turbinated bone, almost closing the air passage. It has the appearance of granular tissue and presents some hard rough spots, due to the presence of pieces of necrosed bone. An operation is performed—namely, incision into the nasal cavity to the inner side of the false nostril, severing the turbinated bone and separating it from its attachments with bone forceps and fingers. There is much hæmorrhage, which is controlled by pressure. The result is very satisfactory. The growth examined with the microscope is found mostly fibrous and apparently of inflammatory origin.—(*Veterinary Journal, March.*)

BRAIN AND HEART SYMPTOMS DUE TO ASCARIDES IN A MARE [*H. Gibson, B. A., M. R. C. V. S.*].—An aged cart mare has always worked hard. For twelve months she has peculiar paralytic manifestations. She carries her head in a stiff, erect position, her eyes have a glassy stare. When the ground on which she walks is irregular she stumbles and falls. She has lately had colics, and then her pulse has been like that of a dying horse—heart very irregular and intermittent. She died in a last attack of colic by twist of the intestine with strangulation. The stomach was much distended and filled with a large number of *Ascarides megalocephala*, to which the author attributes the brain and cardiac symptoms shown during life.—(*Veterinary Journal, March.*)

STREPTOCOCCIC MAMMITIS IN A CAT [*Prof. Geo. H. Woolridge, F. R. C. V. S.*].—Mother of many kittens, this cat had a swelling for three weeks, which has become firmer. She is dull now and refuses food and milk. She has now two or more circumscribed swellings at the posterior part of the abdomen, on each side of the median line, and running backwards in the inguinal region, a cord-like thickening which ends with a slight enlargement over the inguinal ring. It resembles a double in-

guinal hernia, but as they are not reducible they must be probably tumors, which demand an operation. Everything is prepared, and, as the skin is freely opened, a quantity of thick creamy pus escapes. Both sides are alike. The cavities are disinfected and closed. The cat rallied from the anæsthetic, but died in collapse the next day. The pus examined contained numerous chains of large streptococci. The cord-like swellings were inflamed lymphatic vessels.—(*Veterinary Journal, March.*)

CARCINOMA OF THE HEAD OF A HORSE [*Prof. Geo. H. Wooldridge, F. R. C. V. S.*].—The record of an old mare which had a growth on the off side of the face, with a nasty looking "fungating" surface and giving a very offensive discharge. There was also a running at the nose, blood stained, offensive and very copious on the near side. There was abundant discharge from the off eye. An operation was decided upon and the animal cast and prepared for the removal of the growth. But the hæmorrhage was so profuse, and the growth extending into the sinuses, the animal was immediately killed. At the post-mortem it was found that the diseased process extended into the frontal and maxillary sinuses, and the greater part of the nasal chamber of the right side was diseased. The inferior maxillary sinus was not affected. The upper part of the nasal turbinated bone was destroyed. The septum nasi and the bones of the left side were not diseased. The lymphatic glands were not diseased. The examination of the growth revealed its carcinomatous nature.—(*Veterinary Journal, March.*)

OBSTRUCTION OF THE INTESTINE OF A PUPPY CAUSED BY A RUBBER NIPPLE [*J. F. Miller, D. V. M., New York State Veterinary College*].—Six-weeks-old puppy is greatly emaciated, has poor appetite, bowels irregular, no vomition. Indigestion is diagnosed and proper treatment prescribed. No improvement is noticed. Examination of the abdomen is negative. Cathartic and worm treatment given. Slight improvement follows. After three days she was found in a state of collapse. The abdomen being rather elastic, was examined with manipulations, and the presence of a foreign body somewhat detected. The condition of the animal did not allow an operation. After death the post-mortem revealed the presence of a rubber nipple, such as is used on bottles for feeding children. The nipple had caused a perforation of the intestinal walls with escape of intestinal contents into the peritoneal cavity and induced the sudden collapse with fatal peritonitis.—(*Veterinary Journal, March.*)

BACTERIAL NECROSIS OF THE CARTILAGE OF THE LARYNX

[*J. Willett, M. R. C. V. S.*].—Called to see an aged gelding, the author found the horse apparently suffering with cold and sore throat. With ordinary treatment the horse returned to work in a few days. Later on he had another attack, which demanded tracheotomy. He had an abscess which opened in the throat. He improved for a few days and had another abscess. He then became lame on one hind leg, then on both fore. Treated for rheumatism, he seemed to improve. Then came another spell on the throat with swelling. To find the true condition of things he was cast, but the examination revealed nothing, except that the pharynx was swollen. Finally having another attack of the throat, and the case being hopeless, he was destroyed. Post-mortem showed the larynx greatly swollen with much œdema in the surrounding tissues and the cartilage on the right side showing a patch of necrosis. This bacterial lesion was attributed to bacterial necrosis of the cartilages following an acute streptococcic infection.—(*Veterinary Journal, March.*)

CREOSOTE AS A REMEDY FOR PARASITIC GASTRITIS IN SHEEP [*Henry Taylor, F. R. C. V. S.*].—Having read that Stiles, of America, recommended this treatment, and having had an opportunity to test it, the author records the good results he has obtained by it. Several deaths having occurred in a flock of ewes, and the diagnosis having been confirmed by post-mortem on cadavers, where *Strongylus contortus* had been found, a treatment consisting in the administration of a mixture of creosote in water, one ounce of the first for ninety-nine ounces of the other, was undertaken. A dose of four ounces of that mixture was given to each ewe, with the result that deaths were not observed afterwards. No untoward symptom was observed as the result of the drenching. Improvement set in as soon as the medicine was given.—(*Veterinary News.*)

FIBROMA OF THE UTERUS IN A COW [*Thomas Parker, F. R. C. V. S.*].—Called to visit this animal, the author found her with a mass protruding through the vulva and from which in two or three places blood was spurting out. The growth was about the size of a man's head, and was attached to the os uteri. The base of the tumor was as large as the fist of a man. After careful disinfection, eight or nine strong ligatures were applied through the tumor, at its base, and firmly secured, so as to stop hæmorrhage, and the tumor removed by amputation, about three-quarters of an inch from the ligatures. Antiseptic injections completed the treatment. The growth weighed

three pounds and three ounces. Examined under the microscope, it was found to be purely fibrous in character.—(*Veterinary News*.)

AMPUTATION OF THE PENIS [*C. A. Malvisi, M.R.C.V.S.*].—The record of a case of paraphimosis, in which, after failing in reducing by supporting it, lotions and massing, the author resorted to amputation. Catheter was introduced into the urethra, a ligature applied above the point where the amputation was to be made, and then with the bistoury the diseased part of the penis was removed, a portion of the urethra being left protruding beyond the place of amputation. The animal was then relieved of the hobbles and allowed to get up. Recovery followed without any trouble. This is the second time the author has operated in that way.—(*Veterinary News*.)

CLINICAL NOTES [*E. Wallis Hoare, F. R. C. V. S.*].—Under this heading the author records two cases of gastric injuries. The first was traumatic. In this an animal ran away, and, coming in violent contact with the shaft of a cart, inflicted upon himself a deep wound on the right flank, giving rise to manifestations indicating an early fatal ending. The wound was properly dressed; soon the dressing was displaced by the movements of the animal, and before a second dressing could be applied the horse died. At the autopsy were found: A wound running in the region of the lower third of the twelfth and thirteenth ribs, both being fractured. The diaphragm was torn; the abdominal cavity contained a large quantity of food, and the stomach was ruptured extensively at its pyloric portion. In the second case, the animal had had colics, had been treated by a smith, and finally was brought to the writer with violent colic, which remained rebellious to all treatment. At the post-mortem the large intestine was found distended with gas, also the stomach, which contained food and gases to such an extent that it looked as big as the rumen of a cow. The contents of the stomach were fermenting and in very large quantity.—(*Veterinary News*.)

SURGICAL CASES [*W. Cargill Patrick, F. R. C. V. S.*].—At a recent meeting of one English society, among a number of interesting cases the writer related one of *Amputation of the Penis, followed by Tetanus*. The horse had been operated upon on account of paralysis of the organ, and the operation was skilfully performed according to Dollar's method. The patient did well for three weeks, developed lockjaw and died. There was also a case of *Ventral Hernia, Complicated by Irritating*

Buried Sutures, which necessitated a second operation, and was followed by the appearance of tetanus, which terminated fatally. Most careful antiseptic precautions had been taken with this horse, but the animal having laid down in his stall had certainly been infected then.—(*Veterinary News*.)

ITALIAN REVIEW.

By PROF. A. LIAUTARD, M. D., V. M.

THE TREATMENT OF LOCKJAW BY BACCELLI'S METHOD [*Dr. G. Bianchedi*].—After reviewing all the various methods of treatment recommended against tetanus, the author records one case in which he resorted to the method advised by Prof. Baccelli, which consists in the use of phenic acid. A seven-year-old mule picked up a nail in the street. The owner pulled it out, poured some caustic in the wound and plugged it well with oakum. Very lame, the animal was left in the stable, but after a few days acted so peculiarly that veterinary advice was sought. The case was well marked and the symptoms so severe that there seemed to be no chance for recovery. However, one was given to the poor suffering animal. All the precautions possible were taken to keep her quiet; no light nor draught were allowed to irritate her, and no one was permitted to go near her except the attendant. The treatment consisted in frictions on the masseter muscles and the leg injured by the nail with an ointment made of cyanure of potassium 6 parts and lard 40. Rectal injections of chloral hydrate, 40 grammes in two litres of water, and subcutaneous injections of aqueous solution of phenol at 3 per cent. The first days that these were used did not seem to improve conditions; on the contrary, perhaps the symptoms were more marked, and, in fact, assumed such an aspect that the end appeared near. However, on the evening of the third day some change was noticeable, less stiffness, less irritability, more liberty in the movements. The treatment was kept up, the frictions made oftener, the dose of phenic acid increased, five grammes at one dose being given and repeated without bad effects. The improvement became more marked little by little, and after one month recovery was complete.—(*Clinica Veterinaria*.)

RECOVERY FROM TETANUS [*Dr. G. Agostinelli*].—From a lacerated and bruised wound of the left hind leg, this 14-year-old horse, after three days, exhibited all the symptoms of lockjaw:

muscular rigidity, general stiffness, contraction of the masseters, difficult respiration, membrana nictitans protruding, etc. With great difficulty, the wound was thoroughly disinfected and the treatment begun by first an injection of antitoxin the first day in the neck. A few hours after a dose of pilocarpine was administered, 25 centigrammes. The animal was unable to partake of any food except milk, and of this he took between three and four litres. The injection of antitoxin was renewed the next day, and the wound of the leg disinfected again, but the animal was so nervous that he had to be put in stocks for that simple operation. On the third day some solid food could be taken. Antitoxin was prescribed for morning and evening. The improvement was more marked. On the fourth day rectal injections of phenic acid were prescribed, in the proportion of 24 grammes of acid in four litres of water, one litre to be administered every three hours. On the fifth day the animal was still better; a drench of sulphate of soda could be given. The rectal injections were kept up for a few days longer, and by degrees all the symptoms subsided, and on the tenth day recovery could be considered as complete. "The antitoxin," says the author, "and the phenic acid had done their work and shown their good effects."—(*Giornale della R. Soc. Veter. Italiana.*)

DIFFUSED SARCOMATOSIS [*Dr. Duilio Ristori*].—Being at the communal market of Padoue, the author observed a cow in a great state of cachexia, which he thought would most likely be the subject of seizure when examined by the meat inspector. He made some inquiries about her, but was unable to obtain any facts as to whether she had been sick, and how long, but it was useless; nobody knew. However, a serious condition existed, and the Doctor was bound to follow her to the slaughterhouse, which he did, and found the following lesions: There was serous infiltration all through the subcutaneous cellular tissue, the muscles were pale and atrophied, all the lymphatic glands were congested, and amongst the viscera the most affected were the ovaries and the heart. The infiltration was such in the right ovary that it had reached a size three times as large as normal. It presented here and there whitish spots. The liver was œdematous and pale in color; the spleen very red, larger than usual, and softened. The kidneys, enlarged, were covered with spots of blackish color. The heart was here and there discolored, and was larger than normal. Under the endocardium were white yellowish zones, more marked towards the

columnæ carnæ. The point of the heart was much thickened by infiltration. All these processes of degeneration and of infiltration had modified the general aspect of the organ, which was nearly four times the normal size, and weighed four kilogrammes and one hundred and fifty grammes. The post-mortem justified the suspicions of the author as well as the microscopic examination. Sarcoma had been diagnosed, and under the microscope the heart, the lymphatic glands, the kidneys and the ovaries proved to be the seat of sarcomatous infiltration.—(*Il Nuovo Ercolani*.)

TORSION OF THE JEJUNUM, SECONDARY TO INTUSSUSCEPTION, IN A MARE [*Dr. Vittorio Gillio*].—Aged twelve years, this animal has had a severe attack of colic, which, treated in the ordinary way by laxatives, frictions, rectal injections and chlorhydrate of morphia under the skin, had died after a few hours without having had any relief from the treatment. At the post-mortem, lesions of unusual interest were brought out. There was a small quantity of fluid in the abdomen, and the intestines were rather congested. But after removing the heaviest mass of the contents of the abdomen, it was found that a loop of the jejunum had made a double twist around the long axis of the mesentery, and left hanging attached to it a ring measuring about 50 centimetres, dark in color and giving the sensation of being filled with something hard. On opening this loop it was found that the somewhat hard condition was due to the presence of a portion of the intestine, which had been invaginated and which when pulled out measured about 20 centimetres in length. Of course, the membranes were much congested, specially those of the intestine, where the invagination had taken place, which had been strangulated by the double twist above. Isolated, these lesions are not rare, and there are many cases on record; but to find them together in the same animal is. It is probable that the invagination was the first to take place and that the torsion was the second and the results of the struggles of the animal during its attacks of colic.—(*Il Nuovo Ercolani*.)

BELGIAN REVIEW.

By PROF. A. LIAUTARD, M. D., V. M.

PSEUDO-ARTHRITIS FOLLOWING THE NON-CONSOLIDATION OF FRACTURES AND TREATMENT [*Prof. Hebrant and Antoine*,

Adjunct].—Many are the means of treatment recommended in cases where union has failed to take place in cases of fracture. Among them is the resection of the bony fragments with or without the suture of the periosteum. This is the method resorted to by the authors. After an injury received in an automobile accident, a Russian hound had a fracture of the right femur, which was treated, but in which union had failed to take place. There was a false joint and the parts below the fracture could be moved in all directions and the dog was terribly lame. The animal was chloroformed, an incision made over the spot of the false joint and this exposed. The bones were kept united only by a fibrous band. This is excised, the ends of the bone are curetted and scraped, the skin closed with stitches, iodoform dressing applied and covered with a plaster bandage, covering the leg from the hock upwards. A window was cut on the outside of the plaster dressing, opposite the cutaneous wound, to watch it. The only difficulty was cutaneous chafings, and a large eczema eruption, which demanded the removal of the whole apparatus before it was intended. However, a strong callus had had time to form, and as the animal was of a lymphatic disposition and careful in moving, the recovery was not interfered with, and the animal got well of his fracture, but remained lame on account of a dislocation of old standing at the hip joint, which had caused a certain amount of shortening of the leg. This is the second instance where the authors have obtained similar results.—(*Annales de Bruxelles*.)

CALCIFICATION OF THE CEREBRAL AND SPINAL ARTERIES IN A BULL.—SYMPTOMS OF IMMOBILITY [*Mr. Huynen, Adjunct to the Veterinary School*].—It is commonly supposed that almost all subacute or chronic diseases of a nervous nature in cattle are manifestations of tuberculosis. This is exaggerated, as Benoit has already described two cases where tuberculosis was not present. This is another case. A ten-months-old bull has been sick for some time. He is in poor condition, lays down most of the time, carries the head extended. When standing he is dull, indifferent to all surroundings. He then carries the head up, and if this is lowered by force it rises again as with a spring. All the other functions are about normal—respiration, circulation and temperature. General sensibility is depressed, pupil dilated, moving difficult and stiff. After a few steps the animal staggers and falls. Let loose the animal walks, turning in a circle to the right or to the left. At times he goes straight,

knocks against obstacles in front of him and stops dull and asleep. He died before the tuberculin test could be applied. At post-mortem very few small tubercles are found in the thoracic glands, but none in any other organs. On passing the fingers over the meninges, these are found rough to the touch; feel like tubercles, but are not. This roughness is due to calcareous deposits, which have taken place in the coats of the bloodvessels of the dura mater. The small arteries only are affected, the large ones are free. The arteries that are diseased form hard cords, opaque on account of the presence of the plates of calcareous formation, which are round or triangular or again elongated. The veins are free. There is also an old hæmorrhagic spot in the brain and one in the cerebellum. To this condition of the bloodvessels must be attributed the symptoms presented by the bull and which resembled more or less those of immobility.—(*Annales de Bruxelles*.)

INTRA-MUSCULAR PYÆMIC INFARCT IN A BOVINE [*V. Fally, of the Abattoir of Bruxelles*].—This is the curious record of a case found in a six-year-old cow, killed in good condition and which during her life had never given any indication of her condition. Metastatic abscesses are liable to be met in all the tissues of the economy, but it is rare to observe them exclusively in muscles, as in this case. The general good condition of the animal during life and having had all the signs of perfect health, it is not surprising that the ordinary examination of the carcass failed to detect anything wrong about the animal. The dressing was made by a skilful butcher and nothing was found suspicious. All the organs were sound, except the liver, which was a little large and discolored. When the skin was taken off, the muscles appeared round, full and covered with a healthy coat of fat. In other words, they looked normal. It was only when the carcass was cut in quarters and when sections were made through the muscles that the trouble was detected. There then appeared a discoloration more or less marked. It did not extend through the whole thickness of the muscle, but appeared in spots in the centre of the muscular masses, with irregular forms and varying in size from that of a small nut to that of the fist of a man. These spots are hard to cut, feel like fibrous tissue. In some places, instead of being white, the discoloration was becoming yellowish, or greyish, or even somewhat greenish. In other words, it looked like a mortified tissue, one where a slough is soon to take place. The most important part to notice is that only the muscular tissues was involved and

that all the other tissues, even to the intra-muscular lymphatic glands, remained free.—(*Annales de Bruxelles.*)

TORSION OF THE RECTUM (VOLVULUS) IN A HORSE — RECOVERY [*Mr. H. R. Bredo*].—A four-year-old heavy draught horse is taken with severe colic for some eighteen hours. A veterinarian called, prescribed purgatives, eserine, pilocarpine and rectal injections. No results are obtained, and the author is requested to attend to the condemned animal. The horse presents the following symptoms: Countenance contracted, violent colic; at times he assumes the dog-sitting position, pulse weak and accelerated, respiration difficult on account of the tympanites, which is more marked on the right side. The animal makes useless violent efforts to defecate. Rectal examination is made. When the hand is about entering the rectum, it is arrested by a kind of *cul-de-sac*, which is formed by muco-membranous folds, twisted from left to right, analogous to those observed in cases of torsion of the uterus. In the centre of these folds a small opening is detected, which allows the introduction of one finger, which then feels a soft ball of fæcal matter. A diagnosis of overloaded stomach is made; the struggles of the animal having produced the volvulus. Although the prognosis is serious, treatment is started, and, simple as it was, is followed by rapid successful results. Puncture of the cæcum gives escape to a great quantity of gas, which is stimulated by pressures applied on both flanks. As after that the animal appears much more quiet, another rectal examination is made; the hand then finds no trouble in reducing the torsion and in replacing the rectum in its proper position. Immediately the effects of the purgatives became manifest, a very abundant mass of fæces was expelled and in a few hours everything was normal. The author recommends that puncture of the cæcum be always resorted to in similar cases, so as to be able to reduce the volvulus.—(*Echo Vétérinaire.*)

DR. H. H. MYERS, North Lima, Ohio, has given up his practice and joined the B. A. I. force at Cincinnati.

LEGITIMATE SUCCESSOR TO DOWIE.—We like to have had a funeral yesterday. Mostie Milligan's old cow like to have died. She was down all night and all day. Mr. Jones came along and cast the devil out of her and she jumped up and went to eating. How was that for healing power?—(*Sayre Cor., Sequachee (Tenn.) News.*)

ADVANCED VETERINARY THOUGHT AMONG BREEDERS.

EXCERPTS FROM THE ANNUAL ADDRESS OF PRESIDENT THOMAS H. CANFIELD, BEFORE THE MINNESOTA LIVE STOCK BREEDERS' ASSOCIATION.

In looking over the first report of our association, issued in 1901, covering the proceedings since its organization in 1896, I note that Article 2 of our constitution there printed states that "The object of this association is the betterment of the live stock interests of the state." Since organization I believe it has been the earnest effort of your officers to originate plans whereby the association may accomplish its object. What has been done towards this end you all know without enumeration here. The one thing above all others which I would consider of the greatest importance to ourselves as live stock breeders is the matter of the health of our animals.* If disease is rampant in our herds and flocks success in breeding operations is impossible, and on the other hand no stock that is diseased should be allowed to pass into the channels of commerce.

The action of our association in connection with the organization and subsequent work of the Live Stock Sanitary Board, I would consider the most important we have ever taken. The work of this Board was largely formative, at the start; the campaign had to be planned and it was handicapped by lack of funds, which handicap has continued to date. Its work has increased almost beyond expectation and the field covered by its small executive force is enormous. A copy of its annual report should be in the hands of every farmer and stock-raiser in the state, as the information there contained is very valuable. It is but natural that drastic measures regarding the shipment, quarantine and disposition of diseased animals, valued in some cases up into the hundreds of dollars, should provoke much opposition. Nearly all similar regulations regarding the diseases of the human family have been opposed in a similar way until such measures have proven their own efficiency.

While the Legislatures and Congress are engaged in the ceaseless grind of turning out hundreds of new laws each year,

*This Association furnished the backing to pull this work away from the State Board of Health (M. Ds.), and establish the Sanitary Board (mainly under veterinary control)—[R. R. B.]

we hear cries that there are laws enough now, and that the matter of prime importance is not the passage of more laws but the enforcement of those now on our statute books. I am not one of those to join in this chorus without regard to the matter under discussion, concerning which new laws may be required; but believe each case should be decided on its merits.

We have reached a stage in the development of the work of the Sanitary Board where it would seem advisable that in many cases executive regulations be enacted into laws, and in others the present laws should be amended. One amendment which should be passed would provide an increase in the penalty for violating regulations of the Board concerning the quarantine and shipment of live stock. You all know that the Board's regulations prohibit the importation of breeding and dairy cattle into the state, unless accompanied by a certificate from proper authority showing that the animal has recently passed the tuberculin test. Owing to the number of points of entry by rail, this cannot be enforced unless the shipments are reported by the various railways. To do this often means the loss of business, and, therefore, many shipments are accepted without notification to the officers of the Board. The penalty is not now large enough to make it any object to a railway, or a large shipper, to obey the regulation when it interferes with business. Another amendment might possibly be urged which would reduce the number of appraisers to pass on the value of cattle and horses slaughtered for tuberculosis and glanders, respectively, from three to one, and that one the representative of the state. In a very high percentage of cases, the appraisal set by this representative would be satisfactory to the owner, doing away with the unnecessary expense of the other appraisers. If this were done, it should not be required that the appraisement take place on the premises of the owner, which also has added greatly to the cost. The owner should be protected by some form of appeal to a Board of Appraisers in case of disagreement as to the value. In certain cases protection is now granted by the present law, which can be invoked on protest of owner. Although in the beginning the Sanitary Board was in many senses "blazing the trail" in its issuance of sanitary regulations, it has had the extreme gratification of observing that those regulations concerning the most important matters have been copied in whole or in part by many other states. It was but a year ago last summer, when a great hue and cry was made in the agricultural press against the enforced testing of cattle from

other states, before they would be allowed entrance to the public sales at the state fair. All manner of abuse was heaped upon the Board, but to-day similar regulations are in force in our three neighboring states of Wisconsin, Iowa, and North Dakota, and undoubtedly South Dakota will soon follow suit, while several of these states will enact these regulations into laws during the present winter. There is no reason why we should allow tubercular cattle from other states to be unloaded upon us simply because a compulsory test is not in force upon all cattle within our borders. During the year previous to the last annual report of the Board, 938 head of cattle for dairy and breeding purposes were imported, of which 749 were tested for entrance and 27 were condemned, a higher percentage than has prevailed in all the tests conducted by the Board in our state. During that period there were tested in the state 13,707 head of cattle, of which over 10 per cent. were condemned and slaughtered. Testing has taken place only upon voluntary request of owner except, I believe, in dairy herds supplying their products to cities where enforced inspection is required. A large number of these voluntary requests have not been complied with, owing to lack of funds and the small force at the command of the Board.

During the past two years a very large percentage of the registered herds of cattle have been tested. Previous to that time, owing to the fact that the valuation placed for reimbursement by the state for slaughtered animals was so low few breeders had seen their way clear to incur the risk of financial loss and little response to the opportunities offered by the Board for tests had been made. I have always held that the matter of payment by a sovereign state of part of this loss incurred through the execution of such drastic measures looking towards the protection from disease infection of its peoples was nothing more than a matter of public expediency. As such, I believe the expense to be justified. Some have contended that to be at all efficacious, compulsory test and slaughter should be universal. Granted that such a provision could be carried out, and reimbursement was made as at present, the expense would be incurred entirely within two or three years. Provided there was no provision for reimbursement, and such a law was passed to take effect immediately, would it not unjustly deprive a man of his property without due notice or recompense of any kind? The seriousness of such a step becomes apparent when one's entire means of livelihood is derived from a herd of cattle

which upon test might show a reaction of 50 per cent. or 75 per cent. Many cases are on record when a higher percentage of reaction has been obtained. It is to be expected that a good deal of money would be needed to carry out the provisions of our present law in a state as large as ours, and it is a matter of regret that the Sanitary Board has not had sufficient funds on hand to pay claims filed for horses and cattle that were killed. A large deficiency appropriation is needed at once, and an annual appropriation of two or three times that formerly granted will be required. This may even have to be increased from time to time for a series of years. Hand in hand with this campaign of execution goes a campaign of education, evidences of which are easily shown in the changing attitude which the breeders of live stock have towards the whole subject of tuberculosis. This is already noticeable in the few years in which our Board has been at work, and if the law provided the proper funds to meet all requests for the testing of herds the work would progress much faster. The inability of dairymen to restock their herds, after a disastrous test and slaughter, with cattle that they know to be free from disease, has worked greatly to the disadvantage of attaining early results. During the past year the Board has been able to provide a deputy at South St. Paul so that cows may be there tested, and dairymen may obtain what they need from those that have passed the test, with little, if any, added expense.

I note another distinct step of advancement which shows that breeders are coming to realize the great problem that confronts them and their responsibility connected therewith, and that is the frequency with which we see breeders having their entire herds tested before offering only those that have passed at public sale. I may be mistaken, but I think that the first case of this nature in this state where an entire herd has been offered in this way occurred within the year, and I am pleased to say that the breeder whom I have in mind was a member of our association. Since that time several others have followed suit, though I believe that the first public sale of this kind in the Northwest was held by the live stock association of North Dakota, and much did it redound to their credit. Compared with this manner of holding a sale the dispersion of the world-famous herd of Shorthorns of the W. S. Marr estate can be characterized as nothing less than a travesty upon the whole live stock breeding industry. One-fifth of the whole number offered go out to the Argentine at the bid of one purchaser, only to be

tested upon arrival there and slaughtered at the enormous loss of \$30,000. What shall we say of the four-fifths sold at home for \$40,000 more? At that ringside gathered the most astute breeders of three continents to purchase breeding stock of the most aristocratic blood for the improvement of their herds, and what did they obtain? Animated carcasses crammed a little more with the germs of tuberculosis than those of their own cattle at home. Have we not similar occurrences taking place all over this country of ours? It is idle to attempt to deny that this disease is more prevalent in the herds of pure-bred cattle than in others. The facts substantiate what would naturally be expected from the manner in which breeding operations are carried on; that they are likewise the greatest sources of infection can readily be realized when it is considered how widely scattered are the various animals after sale. Infection of many a small herd of the farmers' cattle can be traced to the purchase of a registered bull made for the purpose of improving his class of stock. Because of these facts and because it would naturally be expected that the breeder of registered stock would be better informed regarding such matters it is most proper that such breeders should take the most advanced steps towards eradicating this disease.

Considering the opportunities which have been offered us by our present law, the progress the majority of our breeders have already made and the condition of the trade in pure-breds, have we not reached the *time* in the development of this disease of tuberculosis in our state whereby it becomes necessary to require that all pure-bred cattle pass the tuberculin test before sale, or be sold subject to said test within two months? Gentlemen, I believe that we have. At some future date this requirement should be extended to cover dairy cattle also, but I hardly think the time is quite ripe for this latter change. It has been proposed that the best solution of the compulsory test of registered stock would be the testing every year, and oftener at first, of every pure-bred herd in the state, and the issuance of a certificate by the Sanitary Board for each animal that has passed. This would save delays oftentimes in the matter of sales and put the whole execution of the regulation upon a broad and satisfactory basis; at least, this method would be worth a trial. I am not informed whether it would be necessary that a law be passed for such a purpose, but I believe that the Sanitary Board, now in favor of such a change, has ample authority for the issuance of regulations covering any such matters which it deems best.

I think, however, that the Board would welcome an expressive approval of such a measure by our Live Stock Association, in addition to that already given by the Dairymen's Association. The expense to the state in the matter of reimbursement should not be greater, after the first two or three years, than now, but, on the contrary, it should steadily decrease as far as payments for pure-bred cattle are concerned.

Of further evidence of the interest taken by breeders in respect to tuberculosis is the fact that the matter of vaccination for the prevention of the disease is being quite widely taken up. It is to be hoped that all that is claimed for the treatment will be realized in its fulfilment. The expense is not very heavy considering the benefits that may accrue. However, it is certain that the more widely bovovaccination is used, the sooner will it be possible to draw accurate conclusions of its efficiency. From the nature of the treatment, some time must elapse before an animal that has received the same could be declared immune from any subsequent infection and, as in the case of many other diseases, the post-mortem examination can be the only absolute proof.

The experimentation along these lines has been so widely taken up throughout Europe, often under the auspices of governmental control, that it would seem that some funds should be placed to the use of the Sanitary Board, or of the Veterinary Department of the Agricultural College, so that experiments could be conducted here, whereby evidence could be furnished at first hand. Provided vaccination proves its end, one dollar spent by the state, in this way, would save thousands in the future eradication of the disease. Even without such evidence, one cannot help but have a strong faith in any treatment advocated by so eminent a scientist as von Behring. He has continued his investigations along similar lines to such an extent that he believes he has discovered a preparation which administered to infants will make them immune from future infection. As he holds that a large majority of the cases of tuberculosis in the human family result from infection during infancy from the milk of the cow, his investigations are of special interest to live stock raisers.

The most encouraging result in the use of bovovaccination in this state, as far as it has come to my knowledge, is the passage of the tuberculin test of a lot of all of thirty-five head which had been bovovaccinated eleven months previous. These calves had been exposed to infection from tubercular cattle in

the same herd, and had been nursed by tubercular dams during all or part of this period.

Rather extensive experiments carried on by Dr. Pearson, of the Live Stock Sanitary Board in Pennsylvania, have proven beyond question that vaccinated animals have, at least, much greater power of resistance to infection, even when they have been forcibly inoculated with tuberculosis for the purpose of experimentation, than have others not so treated. It is also believed that it is of some effect in retarding the progress of the disease when applied to animals previously infected. This whole matter of vaccination deserves our earnest consideration. The alarming increase of tuberculosis in hogs and other farm animals, and even poultry, is evidence that this fight against the disease in our midst has come none too soon. As our Live Stock Sanitary Board is our chief agent in carrying on the combat against this and all other diseases which threaten our live stock it should receive our unqualified support and every aid should be extended to it both by our association, as a whole, and our members individually. If it needs our help in the matter of obtaining sufficient appropriations from the state, let each one of us make a strong personal effort to bring our representatives in the legislature to see the value and importance of the work.

Right here I should like to add that in case our officers in their official capacity see fit to give what assistance they can towards advocating measures approved by a majority of our body that it is the duty of each one of us to give them our loyal support and thus acting together to enable the association to accomplish much more than it otherwise would.

THE Government's estimate of the number of horses in New York City is 129,316, Chicago being next with 73,189 and Philadelphia third with 48,989.

ARMOUR & Co., of Chicago, have shipped nine of their prize draught horses to the International Horse Show, which will occur in London in June. They will exhibit at a number of other shows throughout the United Kingdom. The shipment included the six horses that won the Blue Ribbon Championship at the International Live Stock Show in Chicago in 1906. Among them is "Big Jim," champion draught horse of America, who weighs 2,400 pounds. The horses will be driven by Billy Wales, and will be in the veterinary charge of William McLeod.

COLLEGE COMMENCEMENTS.

ONTARIO VETERINARY COLLEGE.

The forty-fifth annual closing exercises of this school took place March 28. The class this year numbered 400, the largest in the history of the school. C. W. Fogle, of Williamsburg, Kansas, received the gold medal for the best examination. The entrants at the next session will be required to attend for three sessions, and in 1908 the school will be taken over by the Government and placed upon the regular university foundation. The following is a list of the graduates who received their diplomas on March 28:

Andrew J. Abbott, Milwaukee, Wis., U. S.; Jacques E. Aghion, Cairo, Egypt; John Henry Allingham, Kesh, Ireland; Frank Amstutz, Walkerville, Mich., U. S.; James Anderson, Brussels, Ont.; Claude L. Ashbrook, Mattoon, Ill., U. S.

Mark Barker, Calgary, Alta.; Joseph J. Beck, De Forest, Wis., U. S.; Albert E. Bailey, Yorkton, Sask.; Raymond Becker, Cresco, Ia., U. S.; Norton M. Bellamy, North Augusta, Ont.; David R. Benson, Napanee, Ont.; Lester A. Benson, La Moille, Ia., U. S.; Norman G. Bailey, Rosemont, Ont.; Arthur Bissill, Leitchfield, Conn., U. S.; David C. Black, Bowbells, N. Dakota, U. S.; Charles D. Blaser, Buffalo, N. Y., U. S.; A. B. Blecker, Lake Mills, Wis., U. S.; John F. D. Bowersox, Aronsburg, Pa., U. S.; Everet A. Branion, Whitewood, Sask.; Charles H. Mead Briggs, Saltcoats, Sask.; Paul F. Brim, Seneca Falls, N. Y., U. S.; Albert James Brown, Petrolia, Ont.; Jos. W. Earl Bryans, Medicine Hat, Alta.; Almon C. Brodeur, Barre, Mass., U. S.

J. H. Caldwell, Carp, Ont.; Sylvester J. Carter, Chapin, Ill., U. S.; Kenneth Chester, Duncan, Vancouver Island, B. C.; F. Ray Clapp, Picton, Ont.; John M. Coffin, Sherwood, Ohio, U. S.; Frank D. Coles, Jewett City, Conn., U. S.; Michael J. Cone, Pittsfield, Mass., U. S.; Edward M. Corliss, Ryegate, Vt., U. S.; Walter R. Culham, Summerville, Ont.; Albert S. Culverwell, Concordia, Kans., U. S.; Charles M. Curry, Leslie, Mich., U. S.

Ervin M. De Tray, Tontogany, Ohio, U. S.; O. Glenn Davidson, Apple Creek, Ohio, U. S.; Cornelius Dingman, Fremont, Mich., U. S.; Benjamin Dobkins, Welch, I. T., U. S.; James R. Donnelly, Emlenton, Pa., U. S.; J. Fergus Donnelly, St. John's, Nfld.

Austin B. Ellis, Los Angeles, Cal., U. S.; Wm. H. Emig, W. Manchester, Pa., U. S.; W. Austin Ewalt, New Haven, Mich., U. S.

George Farrell, Pheasant Forks, Sask.; Charles W. Fogle, Williamsburg, Kans., U. S.; F. E. Freeman, Pocohontas, Ia., U. S.

J. H. Garrioch, Portage la Prairie, Man.; Elmore C. Gaw, Sheffield Vale, Que.; J. Howard Gaw, Stuart's Draft, Va., U. S.; Sampel J. Gibson, Millbank, Ont.; Archie C. Gillis, Keene, N. H., U. S.; Thos. J. Gilloon, Dubuque, Ia., U. S.; Jas. W. Glendinning, Sunderland, Ont.; Wilbur L. Gray, Berkshire, N. Y., U. S.; Portees H. Gregory, Russellville, Mo., U. S.

Charles Haley, North Augusta, Ont.; Frank L. Harrison, Bad Axe, Mich., U. S.; William F. Harrison, Ingersoll, Ont.; J. R. Head, Gaines, Pa., U. S.; M. Park Hendrick, Linesville, Pa., U. S.; Earle B. Hewitt, Osceola, Wis., U. S.; Harry E. Higgins, Shelby, Ohio, U. S.; Geo. F. Hodam, Le Mars, Ia., U. S.

Wilbur R. Jackson, Belfast, Me., U. S.; Rolph M. Jenkins, Todmorden, Ont.

Donald T. Kevson, Ross-shire, Scotland; James Henry Krey, Victoria, B. C.

Weslie Durand Lamberton, Marshfield, Vt., U. S.; Wm. N. La Viers, Dalton, Ohio, U. S.; Jeptha D. Lee, Templeton, Wis., U. S.; Eugene J. Letendre, Woonsocket, R. I., U. S.; M. H. Lidikay, Ladoga, Ind., U. S.; Albert C. Lutz, Cleveland Ohio, U. S.; Charles V. Lutz, Wickhaven, Pa., U. S.

W. O. McGuigan, Cedar Springs, Ont.; James H. McMahon, Columbia, Tenn., U. S.; Joseph N. McPhail, Lowell, Ind., U. S.; Wm. M. McFadden, Gaylord, Mich., U. S.; Jay MacDonald, Syracuse, N. Y., U. S.

Wm. H. Marriott, Union, Ont.; F. Irving Maxon, Chatham, N. Y., U. S.; Wm. N. Middleton, Southbridge, Mass., U. S.; Wm. M. Millar, Walkerton, Ont.; John J. Miller, Chatfield, Minn., U. S.; A. E. Muma, Arkona, Ont.; John A. Munn, Souris, Man.

Jerome Orr, Uniopolis, Ohio, U. S.

Arthur W. Peacock, Antwerp, N. Y., U. S.; W. Menter Perdue, Newcastle, Pa., U. S.; J. Willard Purdy, Waterloo, Que.; Chas. H. Porter, Watson, Sask.

Richard A. Rathbun, Suffern, N. Y., U. S.; Henry Richards, Indian Head, Sask.; Roy Riddle, Waterford, Ont.; George A. Rumbaugh, Fredricksburg, Ohio, U. S.; Thompson I. E. Rutledge, Portage la Prairie, Man.

Chris. N. Sanderson, Brantford, Ont.; Charles G. Saunders, Sussex, England; Arty C. Saurer Koch, Ohio, U. S.; Stanley Shaw, Dorchester Station, Ont.; John B. Shearer, Huntingdon, Que.; Oliver C. Sheppard, Centreville, S. Dak., U. S.; Thos. M. Shippee, Rowe, Mass., U. S.; Elmer Sinclair, Atlanta, Ind., U. S.; W. Henry Skerritt, Utica, N. Y., U. S.; Gilbert E. Stoulin, Aneta, N. Dak., U. S.; Albert C. Smith, St. Albans, Vt., U. S.; Bruce A. Smith, Port Dover, Ont.; Dalton C. Snow, Athens, Ohio, U. S.; William G. Stedman, Macleod, Alta.; Geo. J. Stephens, Oxford Mills, Ont.; Orrie G. Stevens, Stamford, N. I., U. S.; Jasper B. Still, Neepawa, Man.; Edward W. Stoskopf, Sebringville, Ont.; Edward J. Sullivan, Georgiaville, R. I., U. S.; Chas. Elmer Simpson, Oregon, Mo., U. S.

Percy R. Talbot, Lacombe, Alta.; John Gray, Langdon, Alta.; Herbert C. Tuck, Brighton, Mo., U. S.; Errol A. Tucker, Trafalgar, Ind., U. S.; Allan D. Tweedley, Buffalo, N. Y., U. S.;

Harry C. Utley, Bolivar, Mo., U. S.

Walter R. Van Ness, Mechanicsburg, Ohio, U. S.; Charles F. Varick, Patterson, N. J., U. S.

Robert E. Warren, Bridgeport, Conn., U. S.; V. F. Wanke, Janesville, Wis., U. S.; Burt Widdifield, Stouffville, Ont.; Ralph A. Wilcox, Clayville, N. Y., U. S.; William F. Wise, Barberton, Ohio, U. S.; Paul O. Woods, Carlinville, Ill., U. S.; Norman Wright, Strathcona, Alta.; John L. Wurtzel, South Montrose, Pa., U. S.; Ralph N. M. Williams, Chester, England.

McKILLIP VETERINARY COLLEGE.

The 11th annual commencement of this school was held on the evening of March 27th, at Handel Hall, Chicago. Dr. W. A. Evans delivered the graduating address, and President M. H. McKillip conferred the degree of Doctor of Veterinary Medicine upon the following graduates: F. E. Allen, S. W. Armitage, Jas. W. Broadfoot, H. B. Brady, O. A. Christianson, J. H. Elliot, L. P. Foss, J. H. Hart, G. E. Golden, A. L. Hartsough, M. Hattery, A. V. Hollister, R. C. Julien, J. S. Jennison, F. Lohman, J. W. Leary, G. A. MacKenzie, S. J. Morrow, H. J. Gray, W. A. Smith, D. W. Stickley, J. A. Swanson, H. S. Sowers, J. H. Todd, A. C. Topmiller, J. Y. Veenstra, A. F. Wilson, W. H. Wilke, C. Brown, G. D. Warren, W. A. Sullivan, C. E. Splan, H. A. Trippeer, F. W. Shaffer, A. B. Angell, R. E. Christopher, P. E. Bailey, E. H. Carter, T. L. Grubbs, G. E. Golden, A. F. Hill, A. G. Husband, J. H. Part, J. F. Kennedy, P. Lamb, D.

B. Leary, W. H. McKenzie, Chas. H. McNab, C. A. Mathews, J. T. Purcell, W. C. Steele, W. J. Stokes, W. F. Sirett, C. H. Harte, W. L. Tyler, D. Tenckinck, S. J. Walkley, S. S. Westgate, J. P. West, I. M. Moyle, J. M. Hazard, Jr., F. T. McGlinchy, C. H. Fauks, J. P. Somers.

Dr. O. A. Christianson was awarded the gold medal for the highest standing of three years. Dr. R. E. Christopher was awarded the silver medal, highest standing senior year.

CORRESPONDENCE.

TRYPANOSOMA EQUIPERDUM FOUND IN A CLINICAL CASE OF MALADIE DU COIT IN CANADA.

OTTAWA, CANADA, April 19, 1907.

Editors American Veterinary Review:

DEAR SIRs:—Pathologists will be interested in the information that the *Trypanosoma equiperdum* has been found in a mare clinically affected with dourine, or maladie du coit, at the Quarantine Station established by this Department at Lethbridge, Alberta, in 1904. The first demonstration was made by Drs. E. A. Watson and M. V. Gallivan on February 11th, 1907, in material taken from a vesicle on the mucous membrane of the vagina of the animal above referred to, which was found to be affected with dourine on the premises of her owner, Mr. R. Tiffin, near Lethbridge, on December 21st, 1906, and subsequently removed to the Quarantine Station for purposes of experimental observation.

The disease was successfully transmitted in February to a yearling filly and the parasite subsequently observed in preparations from a fresh plaque. The finding was confirmed by Dr. C. H. Higgins, Pathologist of the Department, on March 21st, and was further observed in preparations taken by him on the 23d and 25th of the same month.

The identity of dourine, or maladie du coit, as seen on this continent and hitherto diagnosed by American and Canadian veterinarians from clinical manifestations alone, with the disease as known in Africa and Asia, as well as in Southern Europe, is thus fully established.

A detailed report of the discovery and of the work which led up to it, as well as of the steps subsequently taken, will be issued at the earliest possible date. I have the honor to be, sirs,

Your obedient servant, J. G. RUTHERFORD,
Veterinary Director-General.

BIBLIOGRAPHY.

NOTES ON BLOOD-SERUM THERAPY, PREVENTIVE INOCULATION AND TOXIN AND SERUM DIAGNOSIS, FOR VETERINARY PRACTITIONERS AND STUDENTS. By Walter Jowett, F. R. C. V. S., D. V. H., Liverpool. Pages VIII.+204. Illustrated. London: Baillière, Tindall and Cox, 1907.

Dr. Jowett has given the veterinary profession a concise and comprehensive summary of the results of investigations directed toward serum therapy, toxins and serum diagnosis. The first chapter deals with immunity, both natural and acquired, including the various theories and explanations. Ehrlich's lateral chain theory is discussed and illustrated with 7 good figures, which are very helpful in understanding this complicated theory. Agglutination is also discussed in this chapter. Chapter II. is on the methods of conferring immunity. The special feature of this is the discussion of the monovalent and polyvalent vaccines and sera, together with the sera for each of the infectious diseases. Chapter III. deals with the ultravisible viruses and their vaccines. Chapter IV. gives a good summary of the etiology of the diseases of animals caused by protozoa. Chapter V. discusses tuberculin, mallein and their uses and serum diagnosis. These are followed by an appendix containing helpful tables from the metric system, the occurrence of spirilla, spirochætæ in canker in horses. There are several plates illustrating the protozoa and the spirochætæ. There is a list of references, including some of the more important books on immunity and the titles of the leading journals in medicine and veterinary science. This work will be of great value to the practitioner in giving him a summary of the present knowledge of these important subjects, giving many of the methods that have been used. These are valuable, as it is difficult for those not in laboratories to consult the original papers. For the student it has the disadvantage of not giving specific references to the literature on the various topics discussed. It is, however, a very valuable work. (V. A. M.)

THE fossil remains of gigantic pre-historic animals were unearthed at Hollidaysburg, Pa., on the Pennsylvania Railroad, recently, and have been forwarded to the Carnegie Institute at Pittsburg. It is considered almost certain that the bones are those of animals that existed at least twenty thousand years ago. The discoveries were made in a limestone formation thirty-five feet below the surface of the earth. They are being carefully studied, and will be classified by experts.

SOCIETY MEETINGS.

MICHIGAN STATE VETERINARY MEDICAL ASSOCIATION.

The 25th annual meeting convened in the Assembly Room of the Hotel Downey, Lansing, Feb. 5, 1907, at 1 o'clock P.M., President James Harrison, of Maple Rapids, presiding. After a few remarks by the President roll was called, showing the following members present :—Drs. Alexander, Bell, S. Brenton, W. L. Brenton, Black, Byers, Brodie, Bellanger, Cumming, Clark, Duff, Donald, Dunphy, W. H. Erwin, Farmer, Gibson, Gohn, Haynes, Harrison, Jopling, Joy, McDonald, McBeth, McKercher, Moody, Morris, Muir, Marshall, Russell, Switzer, States, Slaght, Waddle, Wilkinson, Waldron and Whitney. Visitors present : Drs. Stirling, Clare ; West, Flushing ; Elgas, Hartford ; Harris, Fenton ; Gerlach, Morenci ; H. S. Smith, Albion.

Minutes of last annual meeting in Lansing, and subsequent meeting in Detroit, Sept. 4 and 5, 1906, were read and approved.

President Harrison in his address said that it gave him much pleasure to meet so many at this our annual session, to renew acquaintances and exchange ideas. He said that these meetings were his most profitable and pleasant outings of the year. Our summer meeting in Detroit was a success, and those who were unable to attend missed a rare treat, as we had a royal good time and a good clinic. This being the legislative year, this meeting is of special import. "I have every confidence in our committee on legislation, but I wish to impress on every member the need of their coöperation. We have a good prospect of doing something this year if we all do our duty. We have many faithful, loyal members, but we would like to see more of them attend the meetings and take part in the program, writing papers, etc., and take more interest in our work generally."

Dr. Shumway, Secretary of the State Board of Health, read his paper on "The Veterinarian and Public Health" at this time, as he was in a hurry to get away. This paper was much appreciated, and will doubtless have a tendency to further the good fellowship existing between the State Board of Health and our Association. A motion was made and supported to give

Dr. Shumway a vote of thanks for his able contribution to our program. Carried by a rising vote.

Applications for membership were received from the following gentlemen: W. H. Galbraith, Armada (O. V. C., '05); G. H. Gerlach, Morenci (O. V. C., '06); Adam Elgas, Hartford (O. V. C., '91); Charles Stirling, Clare (O. V. C., '05); N. B. West, Flushing (O. V. C., '05); Ralph C. Harris, Fenton (O. V. C., '04). Applications were referred to the Executive Committee.

Prof. C. E. Marshall's talk or discussion upon swine epidemics was received at this time, owing to his inability to be present later, as announced. The Professor's topic was handled off-hand, and was a very able and comprehensive outline of the epidemics now in Michigan. The loss, it is estimated, may reach as high as \$500,000. There are apparently many more epidemics than those we have known or have studied. There is something accompanying the hog cholera germ that is not known, and there is nothing positive regarding either it or swine plague. It is most pronounced in the West. If we are to discover anything of value we must find out whether it is a single disease or several, and due to one or different germs. Would prefer to investigate these diseases through the veterinarians in the different localities, as they are nearer the conditions to be looked up than any other. We have only found one well-marked case of cholera in the investigations so far this year. Found many other swine epidemics, but cannot isolate the germs in a satisfactory manner.

Dr. Dunphy asked the Professor if he had found any germs of swine plague. The answer was "In one case, near Pontiac."

Dr. C. C. Slaght described some cases he had seen where three separate diseases were seen before it terminated.

Dr. Jopling, member of Committee of Diseases, also reported an outbreak in his locality, which was undoubtedly contagious, as it apparently was brought in by some sows that were added to the herd.

Dr. W. H. Erwin advised that veterinarians when consulted in these cases should go and investigate, and destroy those affected, and dispose of the healthy ones so as to rid the locality of all hogs exposed.

Committee on Diseases—(Partial report above).

Committee on Intelligence and Education—Committee asked for more time in which to report.

Committee on Legislation—said would report to-morrow.

Committee on Finance—not present.

The President appointed a temporary Committee on Finance as follows:—Drs. Jopling, Russell and Hamilton.

Report of the Secretary and Treasurer showed a balance on hand Feb. 1, 1907, of \$167.40. Report referred to Finance Committee.

Election of Officers.—The election resulted as follows:

President—Dr. R. W. McDonald.

First Vice-President—Dr. T. C. Duff.

Second Vice-President—Dr. Geo. D. Gibson.

Third Vice-President—Dr. Erwin.

Secretary-Treasurer—Dr. J. Black.

There being only one nominee for each member of the Board of Directors, the rules were suspended and the following were declared elected:

Board of Directors—Drs. Hal L. Bellinger, George C. Moody, W. A. Haynes, Wm. Morris, Harry E. States, and John Russell.

At 7.30 P. M. the meeting was called to order by President Harrison.

Dr. Joy, who had charge of the question box, announced that he had been handed a few questions.

(1) "What would be considered an honorable settlement (from a veterinarian's standpoint) in case of accidental death in casting a horse?" Dr. Joy answered that he had paid for one, but would not advise it. Dr. Jopling advised always to have the owner assume the responsibility. Dr. Muir said he invariably did so.

(2) "Why would it not be to the best advantage for us to induce our customers to buy registered draught mares for breeding purposes?" Question referred to Dr. Cumming, who thought it advisable to do so. Dr. Dunphy advised against it, as a pedigree is expensive. Rather advise purchasing good domestic mares and improve stock in that way. These questions brought a very prolonged, interesting, and entertaining discussion.

The evening session was closed with Dr. Cumming's subject, "Hints to Beginners on Difficult Parturition." The Doctor advised new beginners to be conservative, use caution, go slow and quietly, and do not get excited, and in the most of cases they will come out satisfactorily. He gave a very humorous and interesting account of his experience along these lines, and his talk was much appreciated, not only by the younger members, but the older ones as well.

Dr. Switzer, in discussion, reported a case of extra uterine pregnancy in a cow; also a case of twins in a cow, where only one was taken. After doctoring the case for a few days for post-parturient fever, he thought he had better look to the womb, where he found a second calf in an advanced stage of putrefaction. He advised all never to leave a case of parturition until positive all are removed. Dr. Adam Elgas also took a very interesting part in this discussion, as his experience has been quite extensive.

SECOND DAY—FEB. 6TH, 9.30 A. M.

Meeting called to order by President Harrison. The Finance Committee made its report at this time as follows: "We find the accounts of the Treasurer correct, and balance on hand as reported." Accepted.

Dr. E. Veldhuis, chairman, made a report for the Committee on Diseases, which was added to the report of the balance of the committee made yesterday. Report received and committee complimented on its full and thorough report, especially upon swine epidemics.

Executive Committee reported on applications for membership, recommending the admission of Drs. Galbraith, Gerlach, West, Elgas, Harris, and Stirling. Rules suspended and the gentlemen were declared elected.

Dr. F. W. Shumway, Secretary of the State Board of Health, was elected an honorary member.

Hon. C. A. Tyler, Secretary of the State Live Stock Sanitary Commission, gave a very entertaining talk upon changes necessary in the Live Stock Sanitary Law. He recommended that the State Veterinarian be placed on a salary sufficient to enable him to maintain a permanent office in Lansing; that the term of office be six years, instead of two, as at present, and that the owners of the stock destroyed by order of the Commission be indemnified for half or two-thirds the value. He advised that the Sanitary Board should not be legislated out of business, but that the veterinarians and Commission give and take. Mr. Tyler's talk was much appreciated, and did much to relieve the strained condition existing the past few years between the veterinary profession and the Live Stock Commission.

Dr. Waldron, chairman of the Committee on Legislation, gave a very comprehensive, full and lucid report for the committee. He explained fully the main features of the proposed

bill. Recommended that a Veterinary Department be instituted at the Michigan Agricultural College. Also that we coöperate with the State Federation on direct legislation.

Dr. H. M. Gohn's topic, "Some Case Reports," was taken up at this time, and elicited a profitable discussion.

Prof. King, of Parke, Davis & Co., demonstrated "A Simplified Agglutination Method of Diagnosing Glanders" * in a very interesting manner. His talks and exhibits were prepared with much care, and were therefore clear and plain and easily understood by all. He said that this method was preferable to the mallein test in cases where there was febrile disturbances. There are cases of infection from introducing the needle for the mallein that renders the test unreliable, which will not occur with the method under consideration. Drs. Smith, Dunphy, Waldron and others took part in the discussion following Prof. King's subject.

Dr. George C. Moody's paper upon "Precautions to be Used in Casting Horses for Operations" was a good practical paper and was discussed by Dr. Switzer and others. Dr. Switzer advised in using the twitch that it was often more efficient if used on the lower jaw.

Dr. C. C. Slaght's paper on "Some Post-Mortem Experiences" was a very interesting history of conditions found in the many post-mortems held by the Doctor. *Case 1.*—Before death paralysis of the hind legs. P. M. showed embolism at the bifurcation of the posterior aorta. *Case 2.*—Symptoms: Very weak, pulse almost imperceptible, partial paralysis. P. M.: bony growth on the walls of posterior aorta. *Case 3.*—Placenta came, but no calf. P. M.: extra-uterine foetus. *Case 4.*—Heifer came in heat, served fiercely by vigorous young bull. P. M.: torn mucous membrane, died of septicæmia. *Case 5.*—Eight feet of small intestines in thoracic cavity. As opening through diaphragm was cicatrized, this condition was apparently of long standing. *Case 6.*—Also diaphragmatic hernia found after death by colic. P. M.: about sixteen feet intestines in the thorax. *Case 7.*—Every bloodvessel on inside of thigh involved in clot. *Case 8.*—Pneumonia case, unusual as the animal laid down to rest comfortably during the sickness. P. M.: left lung all gone except tubes. *Case 9.*—Examination ante-mortem per rectum revealed strangulated bowel. P. M.: a loop of intestines around ovary. *Case 10.*—Symptom: Sitting on

* Published elsewhere in this number of the REVIEW.

haunches. P. M.: gut tie. *Case 11.*—Heart punctured by nail. *Case 12.*—Floating kidney in cow. *Case 13.*—Sucking colts, thirteen feet of intestines packed with worms. *Case 14.*—Heifer swallowed knot of rope. *Case 15.*—Cancer of liver in horse. *Case 16.*—Ruptured bladder in steer.

Dr. Thomas Farmer's paper on "Punctured Wounds of the Foot" was particularly instructive, as the Doctor is also a horse-shoer.

Ex-President Harrison introduced President McDonald, who responded with a few remarks, in which he expressed his loyalty to the advancement of the veterinary profession.

Dr. H. E. States brought up the subject of army legislation, but unfortunately the members were hurrying away to get their trains home, and no action was taken other than to impress the members to write their Congressmen and Senators asking their support.

Moved and supported that our Committee on Legislation be increased to five members and that they consult with Mr. Tyler relative to changes in the Sanitary Law.

Carried.

Moved and supported that the Secretary be given an additional \$10 for extra work in preparing for summer meeting in Detroit, 1906.

After considerable discussion as to the advisability of having a summer meeting it was decided to have a meeting in Detroit during State Fair week, 1907.

President McDonald appointed the following committees:

Intelligence and Education—Drs. Wm. Jopling, Owosso; George W. Dunphy, Detroit; G. A. Waterman, M. A. C.

Diseases—Drs. C. Veldhuis, Detroit; H. E. States, Detroit; Prof. C. E. Marshall, M. A. C.

Finance—Drs. D. Cumming, Port Huron; Chas. Stirling, Clare; John Russell, Elsie.

Legislation—Drs. C. A. Waldron, Tecumseh; H. M. Gohn, St. Johns; James Harrison, Maple Rapids; S. Brenton, Detroit; A. McKercher, Lansing.

Press—Drs. W. L. Brenton, Detroit; J. J. Joy, Detroit; J. E. Ward, Perry.

Clinic—Drs. E. C. Crevier, Detroit; George C. Moody, Mason; George Waddle, Kalamazoo.

Adjourned.

J. BLACK, *Secretary*.

VETERINARY MEDICAL ASSOCIATION OF NEW YORK CITY.

The April meeting was held in the lecture room of the New York-American Veterinary College on the first Wednesday evening, and there was a fair attendance of members and visitors. President Roscoe R. Bell was in the chair and Secretary Blair recorded.

After the transaction of some routine business the President introduced Dr. Robert J. Wilson, of the New York City Board of Health, who delivered a valuable lecture upon the subject of "Practical Disinfection," with special reference to its application to stables where contagious diseases of animals exist or have been in operation. While disinfection is of service for all such diseases, he confined his remarks chiefly to glanders, the great and increasing prevalence of which renders the subject of extreme importance to New York city veterinarians. As the speaker was largely instrumental in formulating the system now in operation by the Board of Health, his remarks were more or less authoritative, and those present were very eager listeners. We regret that stenographic notes were not taken, so that REVIEW readers might have the benefit of his lecture, which was interspersed with a number of formulæ for practical work in destroying the germs of that disease. He does not regard the bacillus of glanders as a very resistant one; on the contrary, its destruction is easily accomplished, providing the disinfectant is gotten into direct contact with the organism, and it is the difficulty in doing this which renders the usual means employed inefficient. No part of the stable where a germ lives must be omitted in the work of disinfection, and therefore he advises not only liquid washing, by whatever means may be regarded as most effective—whether sprays, hand washing or otherwise—but disinfecting gases are essential in reaching cracks and other locations where liquids cannot enter.

Dr. Ackerman opened the discussion, and his long experience as veterinarian to the Brooklyn Health Department has taught him to concur in Dr. Wilson's conclusions. He added many points to the discussion of value, and related some instances demonstrating the extreme longevity of the bacilli of glanders.

Dr. Dixon, of Hoboken; Dr. Darke, of New York; Dr. Blair, of the Zoölogical Park; Dr. Chase, of Bay Shore; and several others related their methods of disinfecting for glanders, and many ingenious and effective methods were brought out.

At the conclusion of the discussion Dr. Wilson was given a hearty vote of thanks for his kindness in giving the Association his valuable advice upon this important subject.

Secretary Blair then read a communication from Dr. William Dougherty, of Baltimore, Md., upon the subject of "Quality in Horses," it being in the nature of a discussion of Dr. F. C. Grenside's paper presented at the January meeting, and which was published in the February REVIEW. The following is the paper in full:

"QUALITY IN HORSES.

"By WILLIAM DOUGHERTY, D. V. S., Baltimore, Md.

"Under the above heading I find in the REVIEW for February an article which Dr. F. C. Grenside read before the January meeting of the Veterinary Medical Association of New York County.

"If I may be permitted, I would like to say a few words on this subject.

"The essayist has named all the points that go to make up a good horse: soundness, conformation, symmetry, breeding, etc., and says that quality is 'indefinable' and 'unexplainable.' Quality is found in all breeds of horses and all animals. With thoroughbreds, for instance, there may be two own brothers or an own brother and sister, raised together, of the same size and conformation: one a first-class race-horse; the other is no account as a race-horse, everything being equal, feed, condition, etc. Now, the difference between these two horses is 'quality.' Look at the great numbers of yearlings that are bought every year, because they had a brother or sister who had 'quality.' Take one, for instance, who is a fine specimen; he is written about by all the turf correspondents, and talked about by the experts. He is purchased for a large sum, and sent to the trainer; he admires him; his gait is good; he works along all right for weeks; the trainer commences to put an edge on him for a race. He gives him half a mile at full speed; he pulls up tired. When he has cooled out he is turned in his stall, when he lies down—tired out. The next day he has no ambition for work. In a few days he is given another trial, but he doesn't do as well—he 'goes back.' The trainer is asked what the matter is, and he answers that 'he trained off.' He is rested up and tried again with the same result. He has several trials, and is finally sold. *He has no 'quality.'*

"As the essayist truly says, one may find quality in all breeds, sizes, and conformations, with many anatomical defects.

And one may find handsome, well-bred, sound, well-proportioned horses with no 'quality.' He asks the question, 'What causes the greater density of bone in some individuals than in others?' I would answer 'Breeding.' The bones of well-bred animals are always more solid and denser; the fibres are finer and more compact.

"'Quality' may be defined as a well-balanced nervous system. The race-horse with nervous force and power, if sound and properly proportioned, is the kind that is found but one a year, or one in ten years. The greater the nervous power, the greater the horse. The old expression, 'a Sunday horse,' means one that will work on Sunday, and not get rested until the next Sunday. He is a horse with no 'quality.'

"A too high degree of quality often ruins a horse. He is too nervous, and contracts many bad habits, such as 'weaving,' 'stall-walking,' 'dreaming,' etc. You will have a race-horse in the morning with his mane all in knots and worked together, completely exhausted. The colored boys will tell you 'the Fairies have been riding him.' Such horses are almost worthless for racing purposes.

"'Quality,' or a horse with a well-balanced nerve power, will always heal wounds better than the lymphatic animal, such as cuts, chapped heels, grabs, or other injuries of the legs or body. A thoroughbred's pulse beats forty to forty-two times per minute; a low-bred horse thirty-six to thirty-four times. Therefore, there is a better supply of pure, fresh arterial blood four to eight times more per minute in the thoroughbred than in the low-bred horse. An example: Take a horse that has been 'nerved;' let him receive a cut, grab, or chapped heel, and see how difficult it is to heal them up; it will take several weeks. And let me say here that should you have such a case heal it by cicatrization with the nitrate of silver.

"'Quality' is shown in the prize-fighter who has the punch to put the other fellow out. How often will you see the small man knock out the large fellow, who looks the perfect athlete.

"You will often see a small horse who strides eighteen feet beat the large one who strides twenty feet. The smaller horse has to gain one stride in every twenty; but if the nervous force were equal in both horses the larger one would win out easily. It is the well-balanced nervous power that makes one animal superior to another.

"If I had to decide in a few minutes as to the 'quality' of

a horse, without the opportunity to give him a proper trial, I would put a file on his teeth. I never saw a horse of low quality with hard teeth. When you find a horse with teeth as hard as the file you will have a horse with 'quality.'

"The essayist speaks of hot-blooded and cold-blooded horses. The thermometer shows no difference in the temperature of different breeds. I presume he would call a thoroughbred a hot-blooded horse, and the common horse the cold-blooded one. They both show the same temperature in a normal condition, and in disease they are about equal. But at work, at very high weather temperatures, there is a vast difference. The thoroughbred will stand more heat and will go a greater distance without raising the body temperature as high as the low-bred horse. A horse in good condition, trained for a race, will not raise the temperature going a certain distance as high as he would if he were not in as good condition. I have been among horses for fifty-one years, and I have never seen but two thoroughbred horses overcome by the heat. It occurred in June, 1874, at Jerome Park. There were two horses that had been winners at the meeting. The trainer had won a barrel of money on them, and so when the races were over he went to New York and stayed there for a week. The horses were not exercised all this time. The morning he came up it had rained and the sun came out very hot. He worked the horses two miles and repeat, with the result that both horses were overcome and fell. I happened there and put a bag of cracked ice on their heads, with other refrigerant treatment, both animals making rapid recoveries, without any ill effects. While this is digressing from the point at issue, I am interested in this phase of the subject, because some years ago I made some observations with the thermometer in training horses. I reason that the thoroughbred, owing to his thin skin, and the fact that his veins stand out more prominently, has his blood cooled more than the coarse-bred horse, whose blood does not come to the surface as does that of the thoroughbred.

"You will find that in a well-bred horse, or a horse of 'quality,' that the nerves are larger than in a horse with no 'quality.' This I have observed many times."

For the May meeting, a splendid program has been arranged as follows:

"The Different Methods of Destroying Pet Animals," by Dr. Clarence J. Marshall, of Philadelphia, Pa.

"Resection of the Flexor Pedis Perforans Tendon for In-

fectured Navicular Bursæ," by Dr. Ray W. Gannett, of Brooklyn, N. Y.

"Seven Post-Mortems following Reactions from Agglutination," by Drs. H. D. Gill and W. Reid Blair, of New York.

"Rabies in a Horse, with Inoculation and Laboratory Tests," by Dr. Charles E. Clayton, of New York. (R. R. B.)

VETERINARY ASSOCIATION OF THE DISTRICT OF COLUMBIA.

A meeting was held on the evening of March 27, 1907. There was the usual large attendance. An election for trustee was held with the result of the selection of Dr. W. P. Collins. Drs. E. C. Schroeder (Superintendent Experiment Station, Bureau of Animal Industry, Bethesda, Maryland), Thos. H. McKeown, C. C. Weeks, John P. Keifer, and Chas. J. Frey were elected to membership.

Dr. John R. Mohler, Chief of the Pathological Division, Bureau of Animal Industry, read a very interesting and instructive paper on "Osteoporosis*," which was highly appreciated and was discussed by the members present.

The Secretary read a communication from the Commissioners of the District of Columbia, announcing the appointment of the Board of Examiners in Veterinary Medicine and the terms for which appointed, as follows: Drs. D. E. Buckingham, five years; John Lockwood, four years; H. W. Acheson, three years; H. Young, two years; J. R. Mohler, one year. The Board has organized and selected officers as follows: President, D. E. Buckingham; Vice-President, John Lockwood; Secretary, H. Young. Examinations will be held during the last week of April.

F. M. ASHBAUGH, *Secretary*.

MASSACHUSETTS VETERINARY ASSOCIATION.

The regular monthly meeting was held at Young's Hotel, Boston, Wednesday, April 10, at 5 P. M. There were eleven members present. Records of previous meeting accepted as read. Dr. C. B. Shaw, of Townsend, was elected a member. It was voted that the Secretary make arrangements for the annual banquet to be held April 24. A discussion on tuberculosis and tuberculous animals was held. On the question of tuberculous animals Dr. Winchester offered the following resolutions:

*Published elsewhere in this number of the REVIEW.

"WHEREAS, It has been proven that tuberculosis from the bovine has been transmitted to the human subject ;

"WHEREAS, It has been proven that the ingestion of the bovine tuberculous bacillus has caused tuberculosis in man ; be it

"*Resolved*, That the Massachusetts Veterinary Association recognize bovine and human tuberculosis as identical and intercommunicable, thus causing the flesh and products of tuberculous animals unfit for human food."

It was voted that a printed copy of Dr. Winchester's resolutions be sent to each member, and that the subject be discussed at the annual meeting, April 24.

Adjourned 8.30 P. M.

F. J. BABBITT, *Secretary*.

PHILIPPINE VETERINARY MEDICAL ASSOCIATION.

The first meeting of this association was held in Manila on December 27, 28, and 29, 1906, and proved a most interesting and instructive assemblage of the veterinarians of the Archipelago. A number of professional papers were read, and a resolution was adopted urging the commission to pass an adequate law for the control of contagious and infectious diseases in the Islands. This resolution has already borne fruit, for the Commission has requested the Director of Agriculture to suggest to them anything which would be of benefit in the construction of such a law.

The following officers were chosen:

President—George E. Nesom, D. V. M.

Vice-President—W. R. L. Best, V. S.

Secretary—R. H. McMullen, D. V. S.

Treasurer—J. A. McKinnon, V. S.

There are twenty members already, and the next meeting will be held in June, when a large increase is expected, as many applications are on file, and it is intended that those who join at the June meeting will do so as charter members. The membership fee and annual dues are eight pesos. The REVIEW hopes to receive the reports of the proceedings regularly.

YORK COUNTY (PA.) VETERINARY MEDICAL SOCIETY.

The veterinarians of York County, Pa., met in March and organized the above Association, which bids fair to become a valuable auxiliary to the State organization and to do good for the profession of the locality. It has ten members to start with,

and it is confidently expected that it will reach twenty or more at its next meeting. The following officers were chosen at the organization meeting:

President—W. L. Herbert, York.

First Vice-President—H. E. Kline, York.

Second Vice-President—W. E. Craumer, Brodbeck's.

Secretary—E. S. Bausticker, York.

Treasurer—Charles Lenhart, Dover.

Trustees—J. D. Smith, Dallastown; John Hamme, York, and M. H. Gladfelter, Paradise.

The next meeting will take place at the National Hotel, York, June 4, at 1 P. M. E. S. BAUSTICKER, *Secretary*.

KEYSTONE VETERINARY MEDICAL ASSOCIATION.

The April meeting of this Association was an especially interesting event, and was held, as usual, in Philadelphia. The principal paper of the evening was by the President of the Association, Dr. B. M. Underhill, of Media, Pa., upon "The Evolution of the Horse," and it was a very scholarly production, showing the most extensive research into the history of the soliped from the earliest times. It was discussed by Prof. Simon Harger and others of the membership. The REVIEW has secured this paper, and will publish it in full at an early date. Dr. Underhill takes a deep interest in the scientific development of the horse, and is a member of the Delaware County Institute of Science.

B. A. I. VETERINARY INSPECTORS' ASSOCIATION OF CHICAGO, ILL.

The regular monthly meeting of the Association was held in the U. S. Pathological Laboratory, on the evening of April 12, 1907.

President Paxson called the meeting to order, and announced that owing to the transfer of Secretary-Treasurer Stafford to Washington, D. C., the election of a Secretary-Treasurer would be held at the next meeting. Dr. B. T. Woodward was elected *pro tempore*. The roll-call and Treasurer's report showed a flourishing condition.

A Committee on Food Hygiene was organized to carry on investigations relative to the subject, and present monthly reports.

The paper of the evening was presented by Dr. Burneson.

Its subject was, "Pathological Alterations in the Lymphatic System." The paper covered subjects of fundamental interest to veterinary inspectors, and created a long and spirited discussion.

Dr. Bennett stated that statistics collected in Chicago showed that 97 per cent. of the diagnoses of "tuberculosis" in swine were based on lesions in the submaxillary lymphatic glands. A large number of these glands which exhibited macroscopic appearance of inflammation without tubercular infection were sent to the pathological laboratory. The microscopical examination of these showed that almost without exception they contained numerous tubercular foci. As a result it was decided that veterinary inspectors should consider all such glands as being tubercular.

After the close of the discussion, Drs. Ransom and Barnes, as representatives of the Canadian veterinarians who have been studying United States methods of inspection under our care, extended to us the hearty thanks of the delegation, for our kindness and interest in them.

B. T. WOODWARD, V. M. D., *Secretary-Treasurer.*

SECRETARY LYMAN, of the A. V. M. A., has eighteen papers already promised for the Kansas City meeting.

DR. GEORGE H. GLOVER, of Fort Collins, Col., is Dean of the new Department of Veterinary Science of the Colorado State Agricultural College. Dr. I. E. Newsom is his assistant.

NEW YORK CITY will hold a work-horse parade on Memorial Day under the auspices of the Ladies' Auxiliary of the S. P. C. A. Brooklyn will also inaugurate a similar event under the directorship of the Children's Humane Club of the Brooklyn *Eagle*. It all helps to engender a higher regard for the work horse and more humanity in his care and treatment. Prizes will be awarded to drivers for the good condition of their charges, and the length of service will be a factor in the decision.

OPENING FOR VETERINARIAN IN VERMONT.—A letter from Dr. H. W. Burgess, Bennington, Vt., under date of April 20, says: "John F. Page, of Manchester, died about two weeks ago. It leaves Manchester without a veterinary surgeon. Manchester is about half way between Bennington and Rutland on the Rutland R. R. It is a busy place and a summer resort, and one of the largest towns in Vermont. It has a good fair, and a good farming town handy by. I believe it would be a good place for a good veterinarian."

NEWS AND ITEMS.

DR. J. B. CAUGHEY, formerly of Columbiana, Ohio, is now an Inspector of the B. A. I., stationed at Cincinnati.

L. J. TURNER, V. S., Winsted, Conn., has purchased a livery and boarding stable, which he conducts in conjunction with his practice.

DR. W. O. KEMP, Key West, Fla., formerly a veterinarian in the Army, was married to Miss Euphemia Pinder, of the same place, on March 30.

DR. W. G. ADAMS, Bureau of Agriculture, Manila, P. I., has returned to his home in Akron, Ohio, saying he has had all he wants of the Philippines.

DR. J. G. HAYES, Freeport, Ill., is confined to his house from a dislocated knee, which he received by being knocked down by a team of horses. He says the REVIEW is a great consolation to him during his confinement.

DR. A. W. AXFORD, member of the Veterinary Medical Association of New Jersey, in practice for thirty-nine years at Naughtright, N. J., has removed to Chester, N. J., where he has resumed the practice of veterinary medicine.

DR. CHARLES EASTMAN has severed his connection with the San Francisco Veterinary College, and entered the service of the Bureau of Animal Industry as an agent in tick eradication. His headquarters are at San Luis Obispo, California.

DR. R. H. McMULLEN, who has been connected with the Philippine Bureau of Agriculture for several years, left Manila on March 15 to accept a temporary appointment with the Bureau of Animal Industry at Milwaukee, Wis. While the Doctor was well satisfied with his work in the Archipelago, the climate did not agree with his health.

DR. H. JENSEN, of Weeping Water, Neb., has very kindly forwarded the REVIEW a splendidly executed photogravure of the eminent Danish veterinarian, Prof. B. Bang, immortalized in veterinary annals through his eminent work in behalf of the science. Dr. Jensen will soon contribute to this magazine some important translations from the Danish veterinary press.

FRED PABST, of Milwaukee, Wis., has purchased from E. D. Jordan, of Boston, Mass., the entire Plymouth stud of hackneys and ponies, and the 125 head have been safely landed upon the former's Oconomowoc farm in Wisconsin. The purchase includes the famous show horse and sire, "Gentleman John," and

the hackney pony, "Dilham Prime Minister." The broodmares number 19, and are the best-bred that Mr. Jordan could find in England. With Mr. Pabst's former importations he has now one of the largest and best studs of hackneys in the world.

VETERINARIANS JOIN WITH PHYSICIANS IN NEBRASKA.—The REVIEW has always advised veterinarians to attend and take part in medical association meetings. There are a vast number of subjects discussed at such gatherings where the veterinarian can contribute valuable thoughts; upon some he has a decided advantage over practitioners of human medicine, and we have yet to learn of an instance where his presence has not awakened in his medical brother a greater respect, a higher appreciation of the knowledge and character of the members of this profession. Indeed, we know of no way by which greater good can be done to the profession than through this medium, and we trust the habit will grow upon us. An instance illustrative of this is recorded in a letter from that loyal veterinarian, George R. Young, of Omaha, Neb. We quote from his letter the following in relation to it: "The early part of this month (April), veterinarians of this city were invited to attend a meeting of the Omaha and Douglas County Medical Association, held on the evening of April 9, where papers were read on 'Rabies,' a disease that has been quite prevalent here for several months. One of the practicing physicians had treated a man bitten through the ball of the thumb by a dog (unknown as to history), and three weeks later was taken to the hospital, where he died within seventy-two hours with characteristic symptoms of acute rabies. The case proved to be of exceeding interest to the medical profession, and, being anxious to learn all they could about it, both in the higher as well as the lower animals, they conceived the idea of inviting the veterinarians to be present and contribute their views by taking part in the discussion. This was done, and I think I may truly say much to their enlightenment and consequent appreciation. The effect of the joint discussion will be felt in the future by a closer friendship and coöperation between the two local branches of medical science. Drs. Hacksby and Hall, veterinarians, prepared an excellent paper on rabies, which was read by Dr. Hacksby. Dr. Scott and myself reported several cases that had come under our observation, and much interest was created among the physicians to learn of the prevalency of the disease, and the necessity to combat it with more intelligence than has been heretofore displayed."

WHAT REVIEW SUBSCRIBERS SAY.

"Must have the REVIEW as long as I remain in practice."
—(*C. S. Baxter, Circleville, Kans.*)

"I have enjoyed the REVIEW very much ; it is a great help to me."—(*Walter H. Martin, V. S., El Reno, Oklahoma.*)

"I would rather contract the 'no breakfast habit' than to do without the REVIEW."—(*B. A. Robinson, V. S., Independence, Kans.*)

"I am more than pleased with your publication, and would feel utterly unable to keep house without it."—(*H. Jensen, Weeping Water, Neb.*)

"I will give the REVIEW my hearty support in the coming year. I could not do business without it."—(*C. B. Estey, V. S., M. D. V., St. Cloud, Minn.*)

"I have only been a subscriber one year, but will always be one now, as I find it the best to be had at any price."—(*J. S. Atkinson, V. S., Marinette, Wis.*)

"Permit me to compliment you upon the high standard the REVIEW has attained. It certainly deserves the patronage of the profession."—(*T. Wigglesworth, V. S., Eau Claire, Wis.*)

"I could not think of doing without the REVIEW, and I do not see how any one in the profession can. I for one would not be without it for many times its cost."—(*H. J. Herrington, V. S., Dunlap, Iowa.*)

"Being an unmarried man, I can't keep house without the REVIEW, and I can't see how the married veterinarians could manage without such a 'helpmeet.'"—(*F. H. McNair, D. V. M., Mount Morris, N. Y.*)

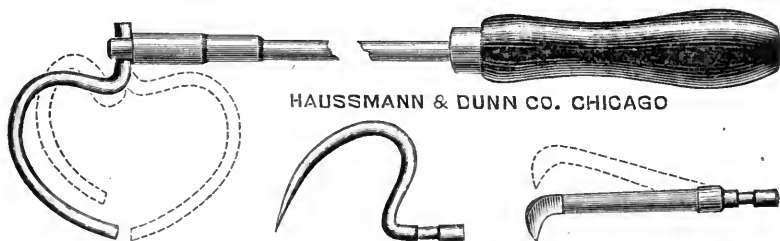
"Enclosed find \$3, being the most cheerfully given 'lucre' I ever spent. I congratulate you upon your successful efforts in the past, and wish you 'the best' the coming year."—(*C. B. Frederick, D. V. M., Canton, Ohio.*)

"I am very much pleased with the REVIEW, and always look forward eagerly to the time for its arrival. I have all the numbers bound into volumes, and I prize them as highly as any of my text-books."—(*J. G. Wimsatt, V. S., Chrisman, Ill.*)

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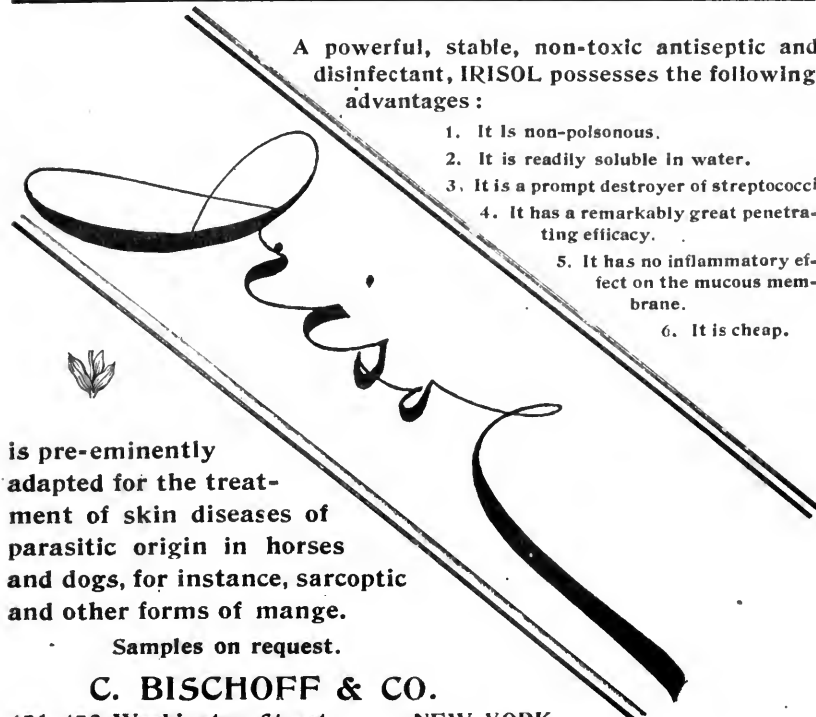
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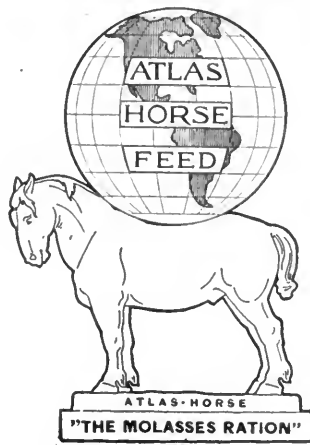
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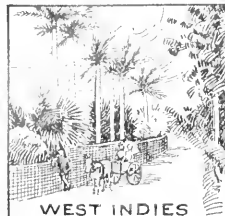
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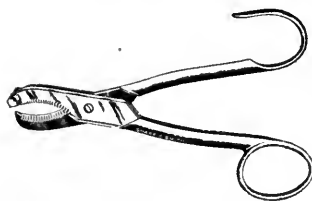


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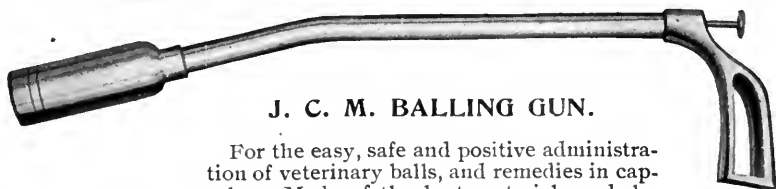
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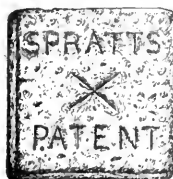
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AMERICAN VETERINARY REVIEW.

JUNE, 1907.

EDITORIAL.

EUROPEAN CHRONICLES.

PARIS, FRANCE, April 15, 1907.

FRENCH CRITICISM ON AMERICAN VETERINARY CIVIL SERVICE EXAMINATIONS.—On page 1255, of our last volume, I wrote at the end of my remarks on the Veterinary Civil Service Examinations: "I fear and I know that the above remarks will not be received in the spirit in which I make them, and probably the new program will not be entertained as an improvement by some of the candidates. . . ."

The March REVIEW has brought confirmation of my fears, and I am taken to task, not by one of the future candidates, but by Dr. D. Arthur Hughes, who replies to my criticism.

Let us look rapidly at the principal part of the subject. Prof. Leclainche, probably misinformed or unacquainted with the true state of affairs, made in print a statement which I read. Any one who loves the American veterinary profession as I do, and has the idea that I entertain of its work, would do what I did: namely, obtain the proper information and reply. I wrote to Washington, and the answer I extracted from the "Manual of Examinations," revised to July 1, 1906. It was the *official confirmation* of Prof. Leclainche's assertion. I bowed to the official notice, expressed my regrets and made comparisons with what was done in some parts of Europe. In his reply Dr. Hughes says: "If Dr. L. had seen sets of questions set during the last five years by the Commission, he would know that they range over all these subjects (sanitary science and sanitary police, sanitary pathology and medicine, meat inspection, micro-

scopy and microbiology) in the most practical manner. In addition, they embody questions on the United States meat inspection laws and regulations, differential diagnosis of contagions, . . . etc."

It is very gratifying for me to believe Dr. Hughes, but his assertion is not an official statement. At least, I believe it is not in print; or, if it is, I have not seen it, and if it does not exist in print, I wonder how others can know of these requirements? How can a candidate know what questions are likely to be put to him? Would it not be proper that they should receive an *official* existence and be made accessible?

It goes of itself that I do not mean the questions by themselves, but at least the subjects relating to the position.

Conclusion: For the present, there seems to be, then, an official program of examinations, and one which; I suppose, is such only at the time of the examination! But, perhaps, after all, when we take into consideration the requirements for matriculation to our veterinary schools and the deficiency and differences in the curriculum of the various colleges, that until those are made what they should be, the official program and . . . the other, are the only justifiable means.

* * *

I have no need nor any desire to consider any other part of my critic's reply. I have no wish to find fault with the mode of selection or of appointment as carried on in the States. It may seem strange to me that one would have to run for a position of veterinary inspector, without knowing the entire list of subjects he may be examined upon; it may appear queer that he should get his admission to a veterinary inspectorship and yet not to be a permanent appointee until after six months' probation; but, as Dr. Hughes remarks, "if this mode of examination and appointment is agreeable, if it seems to work better than any other method, if the results are satisfactory to all concerned," I am sure it would be very improper for me not to be satisfied also, especially when it has not entered into my mind

to offer European methods to replace those of America.

I have been long enough connected with the American veterinary profession to know its value, to appreciate its work, but also to calculate its needs and measure its deficiencies. I do not ask America to "take bodily French or Italian methods for the choice of men for the federal service," but I accept willingly as evidence of the propriety of my article, the very last paragraph of Dr. Hughes' rejoinder: "*Let us by all means adopt, in so far as we may, European standards, but let us adapt them to American conditions.*" Veterinary progress and proper reforms are my objects, no matter what the means used, so long as the results are obtained!!

* * *

THE FACULTIES AND EXAMINING BOARDS.—When a man receives a book which he knows is full of subjects which are interesting to him, he rapidly glances over the leaves, promising himself to make another examination when he will give all his attention to the section which commands his greatest interest. He may postpone looking over the others, but that one he reads and rereads until he is satisfied, or perhaps disappointed.

This is what happened with me when the report of the 43d annual meeting of the A. V. M. A. came to me some time last month. The date of the meeting was far off, and many points I wanted information upon, and among them were: What progress had been made in the reforms of veterinary education? What proposals were offered? What was to come out of the resolutions adopted at the meeting of 1905 in relation to the Association of Veterinary Faculties? Had it not been proposed for this association to work with the Examining Boards? And if so what had been done in 1906?

All these questions were of great interest to me, and of course I looked carefully for their answers in the report of the meeting of 1906.

If we read over some of the minutes of the 1905 meeting, at page 131 and following, we find the eminent reporter on the

question, "The Schools," Dr. G. R. White, of the Committee on Intelligence and Education, stating that a reorganization of the Association of Veterinary Faculties was recommended by several of the most important veterinary schools in America, and mentioning the names of Prof. Hughes, of Chicago; G. A. Scott, of the McKillip College; Prof. W. J. Coates, of N. Y.-A. V. C.; Prof. L. Pearson, of the Veterinary Department of the University of Pennsylvania; Prof. Nelson, of Washington State College; Dean David S. White, of the Ohio Veterinary College, and Prof. Law, of the New York State Veterinary College, all endorsing the same suggestion.

Finally, several proposals were made, and I suppose adopted, relating to the Association of Veterinary Faculties, and to the State Examining Boards.* It was then proper for me to look into the report for 1906 for what had been done in that direction. Let us see. The table of contents refers us to page 397 for the Association of Veterinary Faculties and Examining Boards of North America.

Is this the first meeting of that body since 1905? I do not know. At that meeting there were 8 colleges represented, 10 State Veterinary Boards, 2 representatives of the A. V. M. A., and some visitors. There was much work done, says the report at page 398, and it seems that a pretty general agreement was entertained. My readers are referred to page 398 of the report for more information.

Called to order on August 20, the day before the general meeting, at 9 o'clock P. M., the meeting adjourned at 11.45 P. M., action on the work done being postponed until the report of the Committee on Intelligence and Education, which was to be read the next day, was presented to the Association.

The general meeting opened August 20, in the morning. On August 21 the Committee on Intelligence and Education read its report, which was adopted. And on August 23, at the morning session, the Committee on the Association of College Fac-

* See Report of Meeting, 1905, Committee on Intelligence and Education, pages 163 and 164, Suggestions 1, 2, 13, 20.

ulties reported "PROGRESS." Nothing after!! Nothing more!!

Let us hope that at the next meeting that progress will bring us to something. A pregnant condition of two years' duration will no doubt give us a brilliant delivery! Our esteemed friend, Dr. Hoskins, will see to that.

* * *

But if I was disappointed in my expectations, as I hoped to find something of value on the question of the solution of veterinary educational reforms, I, however, observed some points of rather great interest, and as long as the Veterinary Examining Boards are coming to the front, as long as it is suggested that "the entrance requirements and the course of study in the colleges could be best controlled by the various States Boards," it may not be out of place to examine this question of the Veterinary Examining Boards.

Dr. C. J. Marshall, of Philadelphia, was the chairman of the Committee on Intelligence and Education in 1905, and it is he who enlightens us in relation to this subject.

The Doctor wrote a large number of letters, he received a great number of answers, and out of over half a hundred of inquiries he found that 22 states have laws establishing veterinary boards. The number of members in each of these boards varies: in eight of them there are 5 members, in two there are but 4 members, and in six the number is reduced to only 3. Why such a difference? Among the 22 states that have boards we find that 6 declare that the law has no provision for recognizing licenses from other provinces or states, 4 positively declare that they do not recognize any license from any other board. One, that of New York State, declares, besides, that the candidate must have a preliminary education equivalent to at least 48 counts, or as much as is required in a high school in four full years.

* * *

The information given by Dr. Marshall is most valuable, as it shows how much general reform or revision of the laws imposes itself to modify these organizations created by law, and

in which certainly the spirit, the principal object of their creation, has been overlooked and modified by the wording of the text of the law. What was the object of the law? To protect the practice of veterinary medicine by preventing ignorant and unworthy men from obtaining a license. How was such a result to be reached? It seems to me, in the spirit of the legislator, by an examination of credentials of good moral character, of respectable social standing, and of proper and sound veterinary education as vouched for by the best evidence—the *diploma of a respectable and recognized veterinary institution*.

Instead of that, what have these boards done?

Complying with the letter of the law, their members, 5, 4, or even 3 in number, have undertaken the task of examining in all the branches of veterinary education, a man whose diploma asserts that he had already passed such an examination and that in a satisfactory manner, and, above all, not before a board of 3, 4, or 5 members (who, we may suppose, must have been more or less rusty), but before a whole faculty of veterinary teachers.

Is not that nonsense, and is it not a wonderful surprise to see such good and learned men as those that are on the Boards of Veterinary Examiners convinced that they are doing proper and good work, which, if good (I grant that the intention is good) is, however, the positive evidence of the deficiency of the education, which *all* our veterinary schools pretend to give, and of the *low appreciation*, in the estimation of their professional brethren, of the diploma that these schools deliver?

Are we still in the time of the Jennings and McClure diploma mills?

* * *

In reading the above remarks, I hope that no one will for a moment think that I intend to address any blame to the worthy gentlemen who have filled the position of veterinary examiners, and I certainly reject any idea of professional criticism on my part towards my *confrères*. The work of Dr. Marshall has struck me as exposing great deficiency in the text of the law

and in its application. It has seemed to me that there is something wrong in the *debasement* and in the *ignoring* of the diploma granted by such schools as those spoken of in the recommendations offered by the Committee—section 2, page 136, of the report. It has looked to me wrong for such small numbers of gentlemen to assume the duties of an examination in ALL the branches of veterinary education. It has appeared wrong to me to refuse to a man who applies for a license to recognize the license that he has already won by another examination before another board. And, finally, it has appeared to me an unjustifiable assumption, even if authorized by the law, to refuse a license and reject a man to six months hence, because . . . he has failed before the 3, 4, or 5 gentlemen who constitute the board and have quizzed him, unsatisfactorily, for them.

I know that at its meeting the Association of Veterinary Faculties and Examining Boards has already taken those reforms into consideration. I feel sure that the excellent work of Dr. Marshall will bear fruit, and that the valuable suggestions made by the Committees on Intelligence and Education in 1905 at Cleveland, and in 1906 at New Haven, will be of great benefit to Dr. Hoskins and his worthy colleagues. If by my remarks I have helped to call attention to the state of affairs, and if I have assisted in having it modified, I will be well rewarded!

* * *

INTERNATIONAL ASSOCIATION AGAINST TUBERCULOSIS.—Many of our friends who are interested in the subject of tuberculosis must know that there is an International Association Against Tuberculosis, whose headquarters are in Berlin. It holds yearly meetings. The last gathering of the Association was held in 1906 and the next is to take place at Vienna September 19, 20 and 21 of this year, and a general call has been issued for all kinds of works which may have been or will be elaborated until then. A number of very important questions will be treated at the Vienna meeting, but the program of the

special questions which are principally calling for attention at present are presented in the call that has been made by the General Secretary, Dr. Parmwitz, which reads as follows :

“INTERNATIONAL ASSOCIATION AGAINST TUBERCULOSIS,
“BERLIN, October 27, 1906.

“The question of the channels of entrance of tuberculous infection has, this year, concentrated the greatest interest at the International Conference. The extensive and valuable discussions that have followed the reading of the papers on this subject have thrown a great deal of light upon the differences of opinion, but without coming to a final conclusion. Taking into consideration the vast importance concerning the question of the channels of penetration of tuberculous infection, the Committee has decided to make it the principal object of the order of the day for the coming meeting and to have the question brought to the attention of all, to be studied in all the countries belonging to the International Association.

“Indeed, the object will be to solve, by means of experimentation, of clinical and of anatomo-pathological observations the following questions :

“*A—Tuberculosis of Inspiration.* (1) Experiments excluding as much as possible infection through the tractus intestinalis. (2) Observations relating to the entrance of minute substances into the lungs (anthracosis, etc.). (3) Clinical and anatomo-pathological observations relating to primitive tuberculosis of the superior respiratory organs or of the bronchia.

“*B—Tuberculosis by Ingestion.* (4) Experiments excluding as much as possible the organs of respiration : (a) With bovine tuberculosis (milk, butter, etc.); (b) With human tuberculosis (expectoration, cultures, etc.). (5) Clinical and anatomo-pathological observations of primary intestinal tuberculosis. (6) Experiments and observations : upon the penetration of bacteria through the mucous membrane of the intestine.

“*C—*(7) Experiments and observations upon the development of pulmonary tuberculosis, through other channels than inspiration and ingestion.

"D—(8) Determination of the smallest quantity of bacilli that a tuberculosis by inspiration may engender in comparison with a tuberculosis of intestinal origin and researches upon the following point, namely: if the minimal number of bacilli exist also in the extensive sources of infection and under an appropriate form in the surroundings of man."

Those are important questions and will call for an immense amount of labor before they will be solved!

* * *

NEW TREATMENTS FOR GRANULAR DERMATITIS.—Every veterinarian has met with those cutaneous affections, which in summer are found on some part of the body of horses and are so rebellious to treatment—granular dermatitis, as it is sometimes called. It is essentially characterized by the presence in the centre of the lesions of small nodules with fibrous walls and containing a caseo-calcareous little mass. They are always accompanied by excessive itching, which is very disagreeable; and, with this, the persistency of the larvæ of the *Filaria irritans*, which are present, the wounds are constantly in a state of irritation, and their cicatrization is very difficult to obtain. Many indeed are the modes of treatment which have been recommended, some having given good results, while others have failed.

In a recent number of the *Annales de Bruxelles*, Prof. Lienaux has recalled some cases of granular dermatitis in which he first reviewed all the treatments recommended, such as: sprays of camphorated oil, dressings with tincture of iodine, surgical interference, etc., and suggests his treatment based on the efficacious and lasting action of agents which would destroy the larvæ in their deep situation. He recommends the use of an ointment made of equal parts of arsenious acid, pulverized juniperus, gum arabic and water in sufficient quantity to make a semi-soft paste. The wound is to be made thoroughly dry, otherwise the ointment will not stay, and a coating of the mixture is applied. This caustic paste will give rise to the formation of a thick dry scab, which will slough out slowly, but

under which the cicatrization will be complete. The itching subsides very readily.

I have also read lately of another mode of treatment advocated by an Army Veterinarian, Mr. Queraud, who in Algeria has had occasion to treat many cases of this disease. He recommends picric acid as a specific. It must be used in saturated alcoholic solution, using alcohol at 90° or 95°. The wounds are well cleaned and curetted so as to remove all the granulations, and after a little pressure to control the hæmorrhage they are coated over with a brush dipped in the picric solution. The itching stops immediately and cicatrization goes on slowly, but surely.

* * *

Finally, in the *Revue Generale*, I find another treatment from Mr. Ingueneau, also an Army Veterinarian. For him there are two indications: First, a prophylactic treatment: all wounds and sores are treated with a saturated solution (20-30 per cent.) of sulphate of copper. A first application is sufficient to stop the sero-bloody exudation which attracts flies and gives rise to the itching. A second application, covered with chart coal dust, forms a scab which isolates the wound from the surrounding air and allows a rapid cicatrization. Second, a curative treatment with three steps: (1) Thorough curettage of the wound to remove all soft and protruding granulations; (2) disinfection with sublimate and application of the cupric solution in every part of the wound; (3) cover the part with a compress moistened with the same solution and over it a wadding pad. If this is not realizable, apply a coating of charcoal powder. When the wound is left open, this dressing must be renewed four or five times a day. If the wound is covered, the dressing is changed every second day only. When the surface of the wound is smooth and when it is surrounded by a white border the application of ordinary means is sufficient to conclude the recovery.

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INTESTINAL MANIPULATIONS THROUGH THE VAGINA.—It is more than probable that when Charlier inaugurated his

method of castrating large female domestic animals by vaginal entrance into the abdominal cavity, he did not think that this could find its application for anything else or any other indication, and this proof may be found in the fact that, as far as my knowledge goes, no one has yet resorted to a similar operation when direct manipulations upon some abdominal organs were necessary. The incision of the flank has always been, I believe, the method resorted to, with all its dangers and the almost constantly fatal result that followed.

Lately, however, I have found in two Belgian papers, the *Echo Vétérinaire* and the *Annales de Bruxelles*, the record, published by Mr. Dégilage, veterinarian, of surgical interference through the vagina in some cases of obstruction of the intestines—in large females, of course. The first publication goes back to January, 1898, and refers to two cases, one of obstruction by a stercoral mass and the other of torsion of the large intestine at the pelvic curvature. In the second publication, more recent (January, 1907), again two cases are recorded, one of double adhesion of the floating colon on the left side of the anterior and inferior border of the pelvis, and the other a stercoral collection in the floating colon. These four cases were relieved by direct interference with the hand introduced into the abdomen, by an incision made on the upper wall of the vagina, made a little back of the neck of the uterus—in fact, as in ovariectomy. The stercoral occlusions were broken off and the intestinal circulation reestablished; the twisted pelvic curvature could be returned into its normal position, and the double adhesion of the floating colon, subject of interference with the passage of fæces and cause of severe colics, were divided partly with a blunt curved tenotomy knife and partly with the hand. The first three cases had been treated first with the ordinary modes of treatment, but without benefit.

In the presence of such satisfactory results, is it not justifiable to accept the idea and to resort to an operation which, besides its possibility of being the only way to relieve an animal, will at any rate permit one to establish positively a diag-

nosis and decide as to the conduct to follow, should the disease be incurable?

* * *

FOOT-AND-MOUTH DISEASE IN EUROPE.—Although foot-and-mouth disease offers but little interest to American sanitary veterinarians, as far as its presence in the United States is concerned, a glance at its prevalence in Europe may not be without value, telling as it will how much watching is required to keep the scourge from American shores. These records are taken from the last sanitary bulletin published in the *Hygiene de la Viande et du Lait*.

In Belgium the disease prevails with great severity. In the first part of February, it existed in eight provinces, with 920 head of large cattle taken, 4 sheep, 5 goats, and 332 pigs. In Holland, it was observed in December, 1906, in Limburg, Holland, and in the Brabant. In Switzerland, in 1906, 1,108 head of large and 210 head of small cattle were diseased. In Italy foot-and-mouth disease has existed for two years, and nearly 10,000 cases are reported. In Austria, the principal infected regions are near the French frontier. In France, the bulletin of January, 1907, accuses the disease as existing in 2,154 establishments, spread in 1,012 little towns. In England, as has been the case for a good while, the country is entirely free from the disease.

* * *

ASEPTIC METHOD OF CASTRATION.—It is likely that the mode of castration that has for years prevailed with American operators, is yet the one which is generally in practice—the uncovered method with the ecraseur; of course, leaving aside those cases where a different method is required in the presence of some special indications. Among the different methods, the aseptic castration is one which our friends are familiar with as being the ideal operation, which allows the scroto-dartoid wound to cicatrize firmly by first intention in a few days, varying from 7 to 11. Notwithstanding the important and minute care that it requires, such as the disinfection of the field of operation, of

the instruments, of the hands of the operator and of his assistants, it certainly offers superior advantages over all old methods. It, indeed, avoids many of the accidents and complications of septicæmia, peritonitis, lockjaw, and especially botryomycosis of the cord, which necessitates another surgical operation.

As is known, the *modus operandi* of aseptic castration differs from the one adopted in the method of uncovered testicle, because in it the first scroto-dartioic incision corresponds only to the middle region of the great curvature of the testicle, and the second, that of the erythroid, fibrous and vaginal coats, to the posterior third of the same curvature. In this way the two incisions are not superposed. This mode of castration differs also because of the sutures of the scroto-dartioic wounds.

Prof. P. J. Oceanu, of the Veterinary School of Bucharest, has modified the ordinary operation and simplified it by a method which he describes as follows: First, according to the rules already known, the envelopes of the right testicle are divided. Once the organ is exposed, the efferent canal and the artery of the right cord are ligated with silk braided flat, about one centimetre and a half above the epididymis, and the right testicle is then amputated one centimetre below the ligatures. Then the left testicle, held with both hands, is squeezed towards the median septum, which separates the testicular sacs from each other, and pushed also towards the scroto-dartioic wound of the right testicle. The septum is incised through, as well as the fibrous and vaginal coats, the testicle is pushed through the incision of the septum and its efferent canal and the artery, being in their turn tied with ligatures, the testicle is amputated. The simple and unique scroto-dartioic wound is closed with sutures and covered with a coat of iodoformed collodion.

The operation is complete, only one incision and one suture of the envelopes being necessary.

* *

RABBITS UNSEX THEIR HARE RIVALS.—As long as the question of castration is present, I will in conclusion of this "chronicle" relate an interesting and amusing item which has

found its way in the *Revue Scientifique*, and which is entitled "A new form of the struggle for life." Mr. J. Kunstler, in a recent relation before the Society of Biology, related a very curious fact on the subject of the rivalry, yes, of the hate, that exists between hares and rabbits. These two species of animals are very much alike, and still they are very antagonistic to one another, and to such an extent that where there are many rabbits hares are very few. Is it because the prolific rabbits take all the food that may be found? No. It is because of more evident marks of hostility. In a large shooting property, where hares were getting very few, it was observed that a certain number of them which had been killed had, instead of good and sound testicles, simply a bluish cicatrix, evident marks that they had been castrated. One day in winter, while snow was on the ground, it was possible to discover that the operator which performed these castrations was no less than the rabbits. Screams were heard coming from a certain part of the field, and on approaching the spot from whence these cries came, what was seen but some ten rabbits pushing and biting a poor trembling hare, which was soon thrown down, and, notwithstanding its struggles, was held down and was being castrated by the rabbits chewing and biting its testicles. A few shots killed the rabbits, which were all males.

Is it by vital concurrence or by sexual rivalry that rabbits castrate hares? In the first case, it would be a fact of prevision rather extraordinary. And in the second, it would be equally surprising, as it is a queer fact for an association of males constituting themselves as protectors of females against a single rival—probably not a dangerous one at that—while generally sexual fights take place between individuals of very nearly the same nature, and that castration has never been observed between rabbits.

However, the fact is quite interesting, and if not coming with the authority belonging to Mr. Kunstler would probably be considered as a pleasant joke from some gamekeeper.

A. L.

THE PROFESSION STEADILY GAINING.

Congress and most of the state legislative bodies having completed their work and adjourned, a retrospective glance at what has been accomplished by the veterinary profession through new and revised laws may be profitable at this time. It will disclose the fact that, although we did not meet with success in all cases, we have upon the whole fared well at the hands of the representatives of the people, and there is much reason for general satisfaction at the progress made in this direction. A survey of the winter's work makes plain the fact that the veterinary profession is securing a firm foothold among the people, and it is altogether likely that we are receiving recognition as rapidly as we are deserving of it. Indeed, it may be well for us to compare the advantages thus gained with the record of our own achievements in perfecting ourselves to take the high place that is so generously being provided.

In the Federal Government, the extended meat inspection service has gone into effect during the period under review, and through its operation veterinarians have gained hundreds of positions at increased salaries, and have had that office dignified by becoming "veterinary inspectors" instead of "meat inspectors," while the service has been made more desirable through added authority.

In the District of Columbia, Congress has given to the profession a law which places in the veterinarians' hands the determination of who shall practice within its borders, and has provided adequate punishment for those who violate its provisions. Further than this, it has recognized the soundness of the veterinary doctrine as to the danger from the milk of tuberculous cows, and has decreed that all animals which furnish milk for human consumption shall be subjected to the tuberculin test, those reacting to be removed from the herd, or the dairy excluded from the privilege of marketing its products within the District.

All this means not only work for the veterinarian, but recognition of his guidance in such matters.

To the extreme south, the State of Alabama has placed upon its statute books what is claimed as the best live-stock sanitary law in the country, and the office of State Veterinarian has been created.

Out upon the Pacific Coast, the California Legislature has given the profession a very much better law than existed in that state previously, placing in the hands of the veterinarians the right to say who is qualified to practice veterinary medicine by creating an Examining Board to pass upon the qualifications of applicants for license.

In the Northwest, Montana gave the profession most that it asked for, although their practice act has been delayed for the time being. It made the State Veterinarian a member of the State Board of Health and gave him a substantial increase of salary, while it passed a live-stock sanitary law which is said to cure all the defects in the old one.

In Minnesota, the profession has secured in amendments to its practice act all that was asked for, and the claim is made by veterinarians of that state that their law is now equal to the best in this country. Aside from this material gain, they have been instrumental in obtaining a stallion registration law, which requires all breeding animals submitted for registration to be examined by a qualified veterinarian. The Board having this important work under its control must have a member of this profession upon it.

In the Middle West, the Governor of Illinois has shown his appreciation of the worth of this profession by dismissing from the important office of State Veterinarian of the leading live-stock state of the Union a man who was lacking in qualification and supplanting him by one who is an honor to his fellow-veterinarians and one whom they can endorse and support. For this act, in the light of the persistent refusals of his predecessors to respect the repeated demands for his removal, Governor Deneen has fairly earned the lasting gratitude of the profession everywhere.

Kansas has during the year placed its mark of approval up-

on her veterinarians by throwing around them her protecting arms, and has given them a practice law which is fairly good to start with.

In Pennsylvania the veterinarians have asked a great deal of their lawmakers, and they have been most liberally dealt with.

Aside from complying with their demands for greater safeguards around the excellent practice act already in force, at this writing there is every prospect of an additional hundred thousand dollars for the Veterinary Department of the University and an appropriation sufficiently large to compensate an assistant to the present overworked State Veterinarian.

In Colorado, not only has the profession secured additional evidence of the fostering care of the State Legislature, but the Agricultural College has been subsidized to found a Veterinary Department upon a high plane of educational proficiency.

Across the Canadian border, the veterinary profession has not been so generously dealt with in all the years of its existence as during the period under consideration. The Government has taken over the chief veterinary school in the Dominion, with the promise of placing it in the front rank of American veterinary colleges, and she has undertaken to install a system of meat inspection which has already given desirable appointments to nearly fifty members of this profession. The conduct of the affairs of the Health of Animals Branch of the Department of Agriculture has been so creditable that it has made it possible for the veterinary profession to obtain a great many advancements in a very short time.

Even in Cuba, where little could be looked for in the unsettled condition of the country, the establishment of a veterinary school is recorded in this number of the REVIEW. It is true, the school is a private enterprise, but a demand for veterinarians must have inspired its promoters with the belief that there exists a place for the institution.

It is quite possible that many more instances of substantial

gains by the profession could be recorded here if more diligent search of the files of this magazine were made; enough have been given for the purposes of this article, which are to show that in all sections of the country the people are ready to give us whatever our merits earn, and to do it as rapidly as we are capable of assuming the responsibilities.

Are we doing all we can to justify this confidence and support?

GREAT WESTERN VETERINARY COLLEGE ASSURED.

As REVIEW forms are closing for this number the good news arrives that the Illinois Legislature has granted an annual appropriation of \$30,000 to maintain the veterinary college to establish which a fund of \$250,000 had been raised in Packingtown and given outright to the University of Illinois. The only stipulation was that the school must be located in or close to the Union Stock Yards in Chicago and that the faculty must be as good as can be obtained. The site selected is Halsted Street, immediately south of the International Amphitheatre, and close to the magnificent equine hospital erected by the Stock Yards Company. It is the present intention of the donors to raise an additional hundred thousand dollars for the building and equipment fund, thus assuring a total sufficient to guarantee the highest conception of the promoters. It would appear from these facts that every obstacle has been removed, and, as the legislative appropriation becomes available in 1908, there remains but just enough time to perfect the necessary details.

LONDON MOTOR 'BUSES DOOMED.—An editorial in the *May Journal* indicates that the much-heralded automobile omnibuses of London are a failure. They cannot be kept in workable condition, and some owners state that a loss is incurred every day they operate. Many have abandoned them, and other companies are going into bankruptcy. Machines costing over \$4,000, when put up at auction bring practically nothing, \$10 being the highest bid in a recent attempt to sell some of them.

ORIGINAL ARTICLES.

THE DIAGNOSIS OF GLANDERS IN THE HUMAN SUBJECT FROM THE VIEWPOINT OF A VETERINARIAN.

BY A. SILKMAN, D. V. S., NEW YORK CITY.

Presented to February Meeting of Veterinary Medical Association of New York City.

The writer of these observations has been for a term of years, and is at present employed in the capacity of Veterinarian by the Department of Health of the City of New York, and is attached to its Division of Contagious Diseases in the Borough of Manhattan, the scope of his duties embracing the diagnosis of suspected cases of glanders reported by veterinarians in private practice, the confirmation by diagnosis of cases positively reported, and the supervision of measures taken to prevent its spread, viz.: disinfection and destruction.

He has, therefore, had ample opportunity to become familiarized with glanders in the equine, and, in some instances, in the human subject, and in presenting this, a brief summary of certain of his experiences, for consideration before your honorable society, he wishes that you will feel that he is actuated by a sincere desire to promote discussion of this heretofore but little understood subject, and trusts that it will be productive of thought and research, and hopes that he may, in the near future, listen to papers by other and more eminent practitioners, all leading to the elimination of the *Bacillus mallei*.

Glanders in the human subject is not by any means the rare disease it is generally supposed to be. The writer is fully persuaded that many deaths have occurred through glanders which have been incorrectly attributed to other causes, through similarity of symptoms which have led to erroneous diagnoses.

Glanders may be divided into three forms, acute, sub-acute and chronic. In this paper, the writer will treat of but two,

acute and sub-acute, leaving the chronic form for future discussion in another paper.

In the acute form, glanders runs a very rapid course, terminating fatally generally in from twelve to eighteen days after infection. In the sub-acute form the period of incubation appears longer, and the patient may remain in a condition resembling typhoid for from four to five weeks. In this form the patient may live for six or eight weeks after infection; due, perhaps, to varying degrees of virulency of the *Bacillus mallei* or, perhaps, to the greater or lesser resisting power of the system affected.

It is extremely difficult for the medical profession to diagnose glanders in its first stage. It greatly resembles typhoid fever, and where any suspicion exists, the agglutination test for glanders should be here made, as well as the Widal test, especially in all cases of suspected typhoid where complications are present, and where the Widal test has failed of reaction.

As before stated, glanders in its first stage resembles typhoid fever. After a few days, almost invariably lung complications occur, which are frequently mistaken for acute lobar pneumonia. A few days later you may get articular pains on motion which resemble rheumatism. Suppurative periarthrititis is here not an uncommon complication. About this time may be found one or more intermuscular abscesses forming in some part of the body. These abscesses, when opened, will be found to have no true wall or enveloping growth.

Three or four days before death ensues, pustules appear on the face, neck and shoulders, and frequently all over the body and extremities of the patient, who generally dies before these pustules rupture. These pustules are characterized by rough, uneven ulcerations around the edge of each, and rupture will disclose the contents to be a small amount of yellowish matter. Removing the tissue covering will discover the true farcy ulceration, a peculiar characteristic of which is that immediately prior or subsequent to death, an anæmic, whitish areolar

surrounds this ulceration, which I believe to be a true diagnostic lesion of glanders.

Frequently, the lymphatic glands are found to be involved, and often ulcerations occur in the Schneiderian membrane, accompanied by a profuse discharge a day or two prior to death. Orchitis may or may not be present. With the farcy form the glands are rarely affected.

The temperature plays an important part in the diagnosis of glanders in the human subject. As a rule, the temperature is persistently fluctuating, uncertain and uncontrollable.

Instances exist where a patient has applied to a physician for treatment a week or ten days after infection. The patient presents a dejected and worn appearance; has an anæmic look and peculiar color. He states he does not feel well, complains of lassitude, possesses no strength, has no definite idea of what he is suffering from. He gives no hint as to his employment in the vicinity of horses, and the practitioner on examination discovers symptoms of pneumonia, and commences treatment accordingly. Or, perhaps, the physician finds an abscess forming and inaugurates treatment for sepsis, recommending the removal of the abscess.

An operation discovers a peculiar abscess. This is scraped, washed with a bichloride solution, and dressed with bichloride gauze. Contrary to all expectations, the patient fails rapidly after the operation, and soon dies, the cause of death being variously attributed to typhoid, typhoid pneumonia, lobar pneumonia, erysipelas, multiple abscess or septicæmia, etc.

It can be readily understood that the patient, although affected with glanders, has been treated according to the symptoms evidenced when he first presented himself for observation to the practitioner, who makes the return of death in accordance with his original diagnosis.

The writer has secured permission from Dr. Van Ingen, formerly House Physician of the Presbyterian Hospital, to cause to be read his exceptionally well written paper on a case, one of the first the writer was called on for observation.

This will serve to illustrate a case of glanders in a human subject from the initial to final stages, exclusive of the autopsy.

REPORT OF A CASE OF GLANDERS.

BY PHILIP VAN INGEN, M. D.

The following case, occurring in the service of Dr. G. A. Tuttle, with whose permission I report it, presents features which are not very definitely described in the rather vague accounts of glanders as given in the various text-books of medicine. The case was watched and studied very carefully, but the diagnosis was not made until a few days before death.

The patient, James C., aged twenty-eight, who gave his occupation as a cook, was admitted to the medical wards of the Presbyterian Hospital June 25th, 1903. His family history was negative. He lived in Westchester Co., New York, a district where malaria is rife, but which is otherwise healthful. His drinking water was obtained from a deep well. There had been no cases of "fever" in the vicinity. His habits were fairly good.

Ten years ago he had his first attack of malaria, since which time there had been a return of "chills and fever" nearly every year, of only slight severity. His last attack he thought was about four weeks ago. It lasted only a few days, after beginning treatment with quinine.

Two weeks before admission to the hospital he began to feel miserable. At first there were merely malaise and apathy, which, however, gradually increased in intensity. One week before admission he felt so miserable that he called in a physician, who found his temperature 104.5 F. During the week before he came under our observation his temperature is said to have continued between 102 and 103 F. He complained of a general feeling of soreness, and coughed a good deal, the sputa being muco-purulent, never rusty or blood-streaked. There had been no chills, no epistaxes or vomiting. The bowels were regular. As there were abundant subcrepitant and sibilant râles over both lungs, with high fever and great prostration, he was thought to have broncho-pneumonia. During the last

three or four nights before admission, he was delirious.

When admitted to the wards with a temperature of 105 F., pulse 112, respiration 30, he appeared to be a fairly well-nourished man, very much prostrated and apathetic. He looked very ill. The tongue was moist and coated with whitish fur, especially over the back part. Along its margin were four or five yellowish areas from one-fourth to one-half inch in diameter, covered with a yellowish membrane which was quite firmly adherent. At the left angle of the mouth was a similar yellowish area. These patches were slightly elevated, and there seemed to be no loss of substance. There was a good deal of congestion of the pharynx and tonsils, but no exudate was visible. The superficial lymph-nodes were not enlarged. The apex impulse of the heart was in the fifth intercostal space, three and one-half inches to the left of the median line. The heart was acting irregularly, occasionally intermitting, and a soft systolic murmur could be heard at the apex, which was not transmitted. Of the two basal sounds the aortic was the louder. The pulse was rapid, irregular, full and soft, not dicrotic, and the vessel wall was moderately and diffusely thickened. Over both lungs a moderate number of subcrepitant and sibilant râles were heard. There was no appreciable dullness or change in breath-sounds. The rounded edge of the spleen could just be felt at the costal arch. Over the right deltoid region was a slightly reddened area apparently due to irritation from a hypodermic injection, which soon disappeared. The right knee was considerably swollen, and was held in a position of extension. It was hot, but not reddened, exquisitely tender, and measured at midpatella one-half inch more than the left. There was also considerable tenderness on deep pressure over the lower half of the right femur, but no thickening of the bone could be made out. There was no appreciable tenderness over any other bone, nor was any other joint involved. Scattered over the entire trunk was a diffuse eruption composed of small macules about the size of a pin-head, lying deep in the substance of the skin. They disappeared almost completely on pressure, and there was

no tendency to form large patches. Subsultus was marked. The physical examination was otherwise negative. The extremities were free from eruption. There was no stiffness or tenderness of the muscles of the neck, nor was there any coryza.

The urine was of a specific gravity of 1020, contained a heavy trace of albumin, a considerable number of hyaline and granular casts, and gave a faint indican reaction. No glucose was present. Examination of the blood on the morning after admission showed 7,900 leucocytes. No malarial plasmodia were found, and the Widal reaction was negative. The leucocytes from this time on never rose above 10,500.

During the three days after admission the temperature ran between 103.5 and 105 F., once falling to 102.7 F. The pulse was less rapid, never being above 100, and varying between 76 and 100. The patient presented more and more of the typhoidal condition. There was low, muttering delirium at night, and by day he was slightly irrational and hard to arouse. The tongue became dry, cracked and tremulous; the abdomen a little distended. There was a good deal of paroxysmal cough with slight muco-purulent expectorations, which did not contain tubercle bacilli. The swelling of the right knee became slowly more marked. The joint was now held in a position of semi-flexion; tenderness and heat also increased. The tenderness over the lower half of the right femur also continued.

On June 29th (fifth day in hospital) the knee had considerably increased in size, and for the first time there was noticed a good deal of induration of the soft parts, with redness, about the outer and posterior aspect of the joint. An exploring needle was introduced into the joint with aseptic precautions, and about two and one-half ounces of thick, sticky, yellowish pus, containing small fibrinous masses, was obtained. The yellowish areas on the tongue and at the angle of the mouth had enlarged. The deep macular eruption noticed on admission had steadily faded, and appeared now only as a faint, dull discoloration of the skin, over which was a very scanty, fine desquamation. The temperature this afternoon reached 106 F.

Operation was advised, but owing to delay in the friends reaching the hospital it was not performed until the following evening. On the morning of the day of operation, June 30, the left wrist was swollen, red, hot and tender; active and passive motion were intensely painful. There were no signs of lymphangitis.

The patient was now transferred to the service of Dr. Hawkes, with whose permission the subsequent history is given. Incision of the knee-joint and wrist was performed by Dr. Hawkes on the evening of June 30, and a considerable amount of sticky, yellowish, thin pus, without odor, and containing large fibrin masses, was evacuated from both joints. The patient did badly after the operation. The temperature remained high for the most part, between 104 and 106 F., once reaching 106.4, and registering 107.2 just before death.

Alcohol sponging had no effect upon the temperature or pulse, which later ranged between 110 and 176.

Two days after operation the patient became semi-comatose. At times he was very delirious, but for the most part he lay in a state of semi-coma from which with difficulty he could be aroused. The discharge from the wounds was at first thin, yellow, odorless and rather scanty, but in forty-eight hours it had become more profuse, thick and foul.

July 4 a deep, boggy swelling was discovered just above the right ankle. It was incised, and a small amount of thin yellowish pus was evacuated. It was not well walled off, but extended for some distance between the muscles of the anterior tibial group. A second abscess, which had appeared over the right malar region, was incised and a small amount of thin yellow pus evacuated. During the afternoon a number of reddened areas, varying in size from one-fourth to three-fourths of an inch in diameter, not well circumscribed, were noticed over the trunk, shoulders and thighs. They were not elevated, but gave a distinct sensation of deep induration. The original deep macular eruption had entirely disappeared. The patient was now in an intensely septic condition, and comatose. Breathing

was labored, rapid, and entirely through the mouth, which had become dry and covered with thick adherent mucus. Crusts had formed at the angles of the mouth and in the nostrils. No ulcers could be seen in the anterior nares.

July 6, another deep-seated, boggy swelling appeared on the dorsum of the right forearm just above the wrist. This was incised, and a small amount of thin, reddish-yellow pus was found lying diffusely between the deeper muscles. None of these abscesses could be traced to bone. The irregular, reddened, indurated areas had now increased in number. They were slightly elevated. The next morning they presented for the first time the following characteristic appearance: Scattered over the whole body, but most numerous on the face and shoulders, were papules and pustules, from one-eighth to one-quarter of an inch in diameter, and with reddened and inflamed bases. Many of them were surrounded by whitish, firm areolæ from one-half to one inch in diameter. The pustules were of a yellowish color, and some of them were umbilicated.

With the appearance of this eruption the question of infection from glanders was inquired into, and it was found that the patient was not a cook, as he had stated on admission, but a fish-dealer. He owned a horse, which he cared for himself, and which was shot by the order of the Health Department one week before the patient was admitted, because it was suffering with glanders. The patient steadily became worse, and died the following day, a picture of the most intense sepsis.

Three cultures were made from the blood during life. Those of June 27 and June 30 were both sterile. The third, taken July 5, gave a characteristic growth on potato and in milk, and morphologically proved to be a pure growth of *Bacillus mallei*.

Three cultures were made from the pus from the joints. The first, from that obtained by aspiration of the joint, is reported as showing a growth of a bacillus of unknown variety. Does not give characteristic appearance of glander bacillus on potato and does not coagulate milk. Probably a contamination. The second, from the pus obtained on incision of the joint, showed

a growth of pure white colonies and some yellow colonies, the former proving to be *Staphylococcus pyogenes albus*, the latter sarcinæ. The third was made from the discharge from the joints, on July 6, and showed a very abundant and mixed growth, but no *Bacillus mallei* could be isolated.

Immediately after death a culture was made from the pus of an unbroken pustule, which gave a characteristic brownish growth on potato, and rapidly coagulated milk, with formation of a yellowish growth on the surface. Morphologically the bacterium was characteristic *Bacillus mallei*. A pustule was also excised and sections were made which showed the presence of the *Bacillus mallei* in the substance of the pustule.

Unfortunately, an autopsy was not permitted.

* * *

Another case of interest also treated at the Presbyterian Hospital is the case of James M., an Italian, forty-three years old, who applied on November 12th for treatment, and who died on November 30th, 1906. A few facts only will be stated, as the doctors at the hospital have written up his case to the minutest detail, and which let us hope to see published for the benefit of the medical profession. If it is not published, the writer will endeavor to secure permission to read it for the benefit of the Society on some future occasion.

This man owned two horses. About six weeks before he was admitted to the hospital, one of these horses died, and the other became sick. Two or three weeks before he was admitted to the hospital the other horse died. He said that the doctor who had treated his horses said that they died of pneumonia. The writer examined the horses stabled where he had kept his, and found two of them suffering from glanders. They were destroyed, with another which was condemned on mallein test. When this man was admitted to the hospital he said that he had been sick for about six weeks.

The point to bring out in this case is that the Widal test was made at three different times, and each time it was negative. About twenty-four hours before death a specimen of

blood was taken for the agglutination test for glanders, which Dr. Collins informed me agglutinated 1-1000 complete. An autopsy was held by Dr. George A. Tuttle.

An intermuscular abscess was opened in the leg, from which was obtained some matter. Two guinea-pigs were injected. One died in about twenty-four hours, showing a slight Strauss reaction, death probably being due to septicæmia. The second pig died in about forty-eight hours, giving a good Strauss reaction.

The writer desires at this time to express his sincere appreciation of the courteous treatment that has been extended to him at the Presbyterian, New York, and Gouverneur hospitals on various occasions. Also, to Dr. Collins, of the Research Laboratory, to whom we are all indebted for her effort to perfect the agglutination test for glanders.

The writer begs to refer to the case of Mr. W——, which came under his personal observation.

This man was the owner of two horses, employed to haul an ice-wagon. Glanders developed in a stable where these horses were kept. The writer examined all the horses stabled there, quarantined a number, and held them for mallein test.

The owner strenuously objected to his horses being held, claiming that they were unaffected, and that they ate as well as ever. Arguments were advanced in favor of the writer's reasons for testing his animals, without convincing the owner. In the writer's absence, he signified his intention to a stableman of giving one of his horses a bolus, which he subsequently carried into effect. While removing his hand from the horse's mouth, he discovered that he had been cut on the back of his thumb. The stableman advised him to bathe the wound with a disinfectant, but Mr. W—— declined to do so, stating his unbelief in precautionary measures. Three days later he complained of feeling unwell. The fourth day found him no better. On the fifth day one could see he was very ill; he had a drawn, dejected appearance, and was evidently very weak.

Meanwhile, the quarantined horses had been tested, and a

number, found to have been glandered, destroyed, among which were two of Mr. W——'s. On the sixth day the writer was informed that Mr. W—— was at home, ill, and that his physician had diagnosed his case as typhoid fever. On the eighth day he was removed to a hospital, where he was examined and the case diagnosed as typhoid pneumonia.

The writer called at the hospital soon afterward, inquired after the patient, and requested to be informed whether the authorities were in possession of a good history of the case.

Reply was made by the doctor in charge of the patient that he was fully aware of what Mr. W—— was suffering from, that the history was immaterial, and that, were he affected with glanders, he would have so diagnosed it.

The writer differed, and reported the case to the Department of Health as a suspected case of glanders.

Three days later, I again saw Mr. W——, by which time it was a pronounced case of glanders, although the doctor still claimed it was not. The next day the patient died, and the writer insisted that an autopsy be held. This was performed by Dr. G. P. Biggs, and the existence of *Bacillus mallei* demonstrated.

H. W. W. Autopsy. Performed by Dr. G. P. Biggs.

Admitted August 22d, 1905. Died, August 26th, 1905. Autopsy, August 27th, 1905. Inspection.—Body poorly nourished. Rigor mortis.

Skin.—Presents a large number of suppurating nodules, varying from 1 to 2 cm. in diameter. They are moderately elevated above the surface, and many of them are surrounded by a whitish anæmic zone 1 to 3 cm. in width, which is said to have been hyperæmic during life. Even the smallest nodules contain a thick yellowish or yellowish-red pus. Those from which the pus has escaped have a depressed centre. The largest skin nodule is in the left temporal region, and is ulcerated in its central part. The nodules are mostly in the anterior and lateral aspects of extremities, trunk, neck and head, being most abundant on trunk and head. In the left nostril a distinct suppurating nodule 3 mm. in diameter is found, while in the right nos-

tril there are found extensive ulcerations. In the subcutaneous tissue, and not involving the overlying skin, there are also several areas of suppuration 2 to 4 cm. in diameter. The largest is found over anterior aspect of left leg and outer aspect of right leg. Soft tissue about the interior two-thirds of left clavicle is much indurated, and skin covering this region has the whitish appearance noted about many of the skin nodules. Incisions into the indurated tissue show many small collections of thick yellowish pus 2 to 8 mm. in diameter.

No wound of skin is found to explain source of infection.

Peritoneum.—Normal.

Diaphragm.—Attached at fifth space on left side and fourth space on right side.

Pleura.—Small amount of fibrinous exudate over the posterior surface of each lower lobe.

Pericardium.—Normal.

Heart.—Size normal. Cavities contain a moderate amount of dark fluid blood and post-mortem clots of fair size. Valves normal. Small petechia in one aortic cusp. Orifices are of normal size. Muscle normal in color but presents foci of suppuration.

Coronary arteries normal.

Aorta normal.

Lungs.—Bronchi contain a moderate amount of frothy fluid and are slightly hyperæmic. Bronchial lymph nodes not enlarged. Vessels normal. Thin layer of fibrinous exudate covers the posterior surface of both lower lobes. Both lower lobes are very hyperæmic and in their posterior parts consolidated to a depth of 1 to 2 cm. This appearance does not differ greatly from that of hypostatic pneumonia. There is an abscess in left lower lobe 1 to 2 cm. in diameter, reaching to the surface. Consolidated parts are very hyperæmic, and not as firm as in lobar pneumonia. A few small foci of suppuration are found in other parts of lower lobes averaging about 2 mm. in diameter. In upper lobes and middle lobe there are scattered foci of suppuration varying from 2 to 5 mm. in diameter, the number being rather greater in upper than in lower lobes. All suppurating foci are surrounded by zones of consolidation 1 to 3 mm. in thickness. Hæmorrhages are abundant in pleura over lower lobes.

Spleen.—Organ is much enlarged. Soft and dark red in color, weight 9 ounces. No foci of suppuration seen.

Kidneys.—Weight 13 ounces. Slightly enlarged. Capsules not adherent. Surface smooth. Cortices moderately swollen. Markings indistinct. Valves normal. No nodules or foci of suppuration.

Pancreas.—Normal.

Gall Bladder.—Normal.

Liver.—Weight 5½ pounds. Gross examination shows no evidence of lesions.

Stomach.—No lesions.

Intestines.—Negative throughout, except for a few areas of hyperæmia in ileum.

Bladder.—Normal.

Prostate.—Normal.

Thoracic Duct.—Normal.

Spine.—In dorsal region partly behind and to the left side of the aorta and spine is an area of purulent infiltration and induration of tissue extending along the spine a distance of 8 cm. Spine and aorta proper do not appear to be involved.

Lymph Nodes of body are not found enlarged, and none of them examined contained any pus.

Trachea.—Normal.

Larynx.—Normal.

Pharynx.—Tonsils and tongue normal.

Thyroid Gland.—Not distinct. Glanders bacilli obtained.

* * *

The writer also begs to submit the following history of a
CASE TREATED AT THE GOUVENEUR HOSPITAL.

On June 13, 1904, Stephen Sanbelia, a Russian, applied at the Gouveneur Hospital for treatment. On examining him they found that he was suffering with cellulitis of the neck. Just above clavicle on the left side there was some swelling and an area of inflammation. On the arms and legs there were several small abscesses.

On June 14th they examined the swelling above the clavicle, and found that an abscess was forming, and they thought it advisable to perform an operation for the removal of same. The patient was prepared and removed to the operating room,

where gas and ether were administered, and taken well. An incision was made above the clavicle and pus found. The small abscesses on the arms and legs were opened, and found to contain a pale, yellowish fluid.

After the operation the patient continued to grow worse, and many small abscesses developed upon the arms, legs and body. There was a little discharge from the nose, which became more and more profuse. This fluid was translucent and adherent, the same characteristic discharge that we have with glanders in the horse. The wound after the operation was dressed with wet dressings of bichloride, but showed no tendency to heal. The symptoms of cellulitis subsided, but those of general sepsis appeared. The treatment was changed, and the patient treated for general sepsis.

The patient was kept on light diet at regular intervals and his appetite seemed to be good, but he failed fast, and on June 22d the Health Department was asked to send some diagnosticians down to see the patient and to determine, if possible, what the man was suffering with. It was my good fortune to visit the patient in company with Dr. S. K. Johnson, who pronounced it a true case of glanders, which was afterwards borne out by the autopsy, and also by the Bacteriologist. The patient died at 5.50 P. M. on June 22d. It was impossible to get a good history of the case. After the patient died, it was found that he had worked in a stable where there had been glandered horses.

The temperature of this man on June 13th* was 100 at 3 P. M., 101.2 at 9 P. M. On the 14th, 100.5 at 9 A. M., 102.5 at 3 P. M., 101.4 at 9 P. M. On the 15th, 101.1 at 9 A. M., 102.2 at 3 P. M., 102.6 at 9 P. M. On the 16th, 100.8 at 5 A. M., 100.2 at 9 A. M., 100.2 at 1 P. M., 98.8 at 5 P. M., 103.8 at 9 P. M. On the 17th, 102 at 5 A. M., 100.6 at 9 A. M., 100.8 at 1 P. M., 102.4 at 9 P. M. On the 18th, 100.6 at 9 A. M., 101.5 at 3 P. M., 101.2 at 9 P. M. On the 19th, 101 at 9 A. M., 103 at 3 P. M., 102.2 at 9 P. M. On the 20th, 100.4 at 9 A. M., 101.4 at 3 P. M., 100.4 at 9 P. M. On the 21st, 100 at 9 A. M., 102 at 3 P. M., 101.5 at 9 P. M. On the

22d, 104 at 5 A. M., 106 at 9 A. M., 107 at 1 P. M. (the last temperature taken.)

Autopsy Held by Dr. Otto Schultz.

General Appearance.—Well-developed male cadaver, height five feet, six inches. Weight, 145 lbs. Rigor mortis.

Skin.—Forehead, one pustule. Left cheek, three pustules. Right cheek, two pustules, 1 mm. to $\frac{1}{2}$ cm. in diameter. Neck, left side swollen and shows two areas three cm. in diameter, each composed of multiple pustules, and a similar area over left clavicle of similar diameter. Right shoulder, arm and forearm, a number of pustules, some of which are broken through the top, ranging from a few mm. to $1\frac{1}{2}$ cm. On left forearm there is an intra-muscular abscess 5 cm. in diameter. There are a few nodules on belly about 3 mm. in diameter, the same on thighs and legs. Right leg, a muscular abscess extending to and involving cutis 4 cm. in diameter. Back, on the neck and over the shoulder blades and dorsal region numerous pustules, some broken through top, ranging in size from a few mm. to $1\frac{1}{2}$ cm.; larger ones prominent about 3 mm. above surface of cutis. Thorax, abscesses as mentioned in neck. The foci extend through the sterno-mastoid muscles.

Right side of Diaphragm.—Attached at the third intercostal space. Left side attached to fourth rib.

Pericardial sac.—Contained one dram clear fluid.

Intestines.—Normal.

Stomach.—Shows an area of ecchymosis in the most dependent part, near cardia.

Head.—Scalp containing a number of pustules, extending down and involving the periosteum, and some 3 cm. in diameter. Inner aspect of skull shows intense congestion of veins, and, over dura, intense congestion of veins.

Flat hæmorrhagic membrane over vertex inner aspect of dura on right side.

Vessels of pia intensely congested.

Velum also intensely congested.

Fourth ventricle normal.

Brain.—Negative outside of intense congestion of all the points

Nasal mucosa—Is thickened to 3 mm. in the sub fossa, and infiltrated with purulent foci. The rest of the mucosa simply shows a swelling œdema, and occasional purulent foci.

Chest.—Left lung: lower margin of upper lobe several foci few mm. in diameter, surrounded by consolidation dark in color. Bronchi contain a little frothy mucus. Posterior part of apex of the lung is consolidated, dark in color, not granular; also a cavity measuring about $3\frac{1}{2}$ cm. filled with pus. Lower lobe congested posteriorly. Right lung: the apex of right lung a number of slightly yellow-grayish zones, varying in size from a few mm. to 1 cm. in diameter, embracing surface of pleura, extending downward into lung $1\frac{1}{2}$ cm., surrounded by zone of intense congestion. There are a few nodules in upper part of lower lobe.

Heart.—Left auricle contains ordinary post-mortem fatty clots. Right partly clotted, partly fluid dark blood. Heart normal in size and weight. Valves normal. Muscle brown and opaque.

Abdomen.—Spleen is enlarged, weight judged to be 1 pound. The posterior upper part of spleen embracing a zone 6 cm. in diameter is denser than the rest of tissue, hæmorrhagic flat on section.

Liver.—Increased in size and weight, and judged to weigh about 4 pounds, intensely congested and opaque on section.

Kidneys.—Left slightly enlarged, judged to weigh $6\frac{1}{2}$ ounces, cortex swollen, intensely congested and the lobes grayish white and opaque. Capsule strips readily, surface smooth. Right slightly larger than the left; same condition found.

Larynx.—In pyriform fossa on the right side a small yellowish bud 1 mm. in diameter; also one in left pyriform fossa and also one in epiglottis yellowish in color and surrounded by a zone of congestion.

* * *

The following case of Mr. S—— also came under the writer's observation.

This man was a stableman, thirty-nine years of age, employed in a stable where glanders developed.

He complained of feeling ill, and his physician diagnosed the case as pleurisy. On his removal to the hospital a few days later, his case was diagnosed as pneumonia.

About three days prior to his decease, a number of pustules appeared on his face, which caused the question of erysipelas to arise.

The writer, a few moments before the patient's death, managed to procure a small amount of blood with which to try the agglutination test for glanders, which up to this time had not been tried in the human subject. Dr. Collins, of the Research Laboratory, subsequently informed the writer that it agglutinated 1-2000 complete. An autopsy was held, and lesions of glanders found. The duration of illness in this case was eighteen days.

In all cases of glanders in the human subject which have come under the writer's observation, connection has in every instance been established between the patient and some horse or horses proven to have been glandered, and either owned or cared for by the subject, with the single exception of one chronic case.

Glanders will not localize at the point of infection. Wounds through which the subject was known to have been infected have healed, before any marked symptoms of glanders have developed, and have subsequently shown no sign of inflammation or infection.

From observations of sub-acute cases in the human subject, and from experiments with mallein in horses, the writer is led to believe that with small and repeated injections of specially prepared mallein at the initial stages of sub-acute cases in the human subject, the disease would yield, and change into a chronic form, with an ultimate possibility of recovery.

During the past year a number of cases of glanders in the human have been reported, and many of these have been watched by some of our most eminent physicians.

The writer trusts that these few crude remarks may prove an incentive for some of these to give this honorable society the benefit of their observations at some future period.

"I CANNOT think of doing without my old friend, the REVIEW."—(*H. M. Hunter, V. S., Visalia, Cal.*)

THE MASSACHUSETTS BOARD OF REGISTRATION IN VETERINARY MEDICINE will hold its next examination on July 10 and 11, at the State House, Boston.

CRYPTORCHID CASTRATION.

By L. U. SHIPLEY, V. S., SHELDON, IOWA,

Presented to Meeting of Iowa Veterinary Association, Jan. 28, 1907.

A brief *résumé* of the conditions as they are found and dealt with, are as follows: (1) The condition of the animal to be operated upon and surroundings; (2) Best age for operation; (3) Conditioning the animal for the operation; (4) Previous history of the animal; (5) A proper place to operate; (6) Mode of casting and securing; (7) Antiseptic precaution; (8) Operation; (9) After-treatment.

(1) It is hardly necessary to say the animal should be in a healthy condition, but furthermore the operator should also inquire, and investigate the health of other equines upon the premises. Should there be infectious diseases among the horses, such as strangles, or influenza, or some of the sequelæ thereto, the operation should be postponed until you are satisfied there is no danger of your case being contaminated or exposed to infection therefrom, or, in other words, until all cases are fully recovered and the premises have been thoroughly disinfected. By so doing we may avoid a fatality likely to result from even the most skilful operation. The folly of operating upon an unthrifty subject was recently my experience. I was requested to operate upon an animal which had been unsuccessfully operated upon some four or five months previous. I found the animal in such an unthrifty condition that it was under protest that I consented to operate, and after fully informing the owner of the risk of a fatal termination, it occurred seven days after the operation. At the time of operation, upon puncturing the peritoneum, a quantity of straw-colored serum escaped through the operative wound, verifying my suspicion of chronic peritonitis, probably introduced by the previous operation. We often find our subjects in the most unsanitary surroundings, which should be duly considered, for if the animal is to be replaced therein, a great risk of after-infection con-

fronts your subject. Therefore it is of the highest importance that you so impress your client, and, if possible, give the animal the most sanitary surroundings. For this reason I consider the safest after-conditions are obtained by turning out to pasture, where risk of contamination from noxious gases and dust of the barn-yard are avoided. I even prefer this at the risk of getting wet in a warm summer shower, thought to be detrimental to colts after castration. However, this latter danger I believe to be erroneous; the prevalence of this idea is possibly due to many castrators using it as an excuse or shield for the results of filthy operations.

(2) The operator does not have much to do with determining the age of the animal upon which he must operate, but usually must take them at any age, as he finds them, but where able to previously advise, it is best to operate upon one- or two-year-olds, for some of the following reasons: They are more easily handled; they are usually out at pasture, and can be returned therein, because their amorous propensities have not caused them to be confined. Under these most favorable circumstances the best results are obtained, while the older animal, having necessarily been confined, cannot immediately be removed from his quarters to the pasture, hence the greater risk of after-infection.

(3) In considering this unquestioned advantage to the subject as well as the operator I realize the difficulties of a busy practitioner always being able to have a subject properly prepared for operation, as they are often many miles distant, which might necessitate a second visit at the expense of valuable time, yet I believe all operators will agree that previous preparation by withholding food and water, and possibly the administration of a cathartic, is of unquestioned advantage. This applies, of course, to older animals, that are confined, and not to one- or two-year-olds running in pastures. Again, I would especially caution an inexperienced veterinarian to avoid immediately operating upon a large, strong animal previously confined to a stall, as they often are, without having them given some gentle

exercise prior to operating. This may avoid an attack of the bane of the veterinary profession—azoturia, which would be embarrassing indeed. This rule, of course, applies with like force to all equine subjects of surgical operations, where restraint is necessary.

(4) Obtaining the history of your subject, I need hardly remind the experienced operator, is of much importance. We should ascertain if the case has been previously castrated, and when, and, if possible, on which side a testicle has been removed. If this can be truthfully obtained the operator may then proceed in a definite manner. However, this information is not always reliable, and the operator should not take this for granted and proceed to operate without carefully examining the scrotum for the cicatrix of the previous operation. If done by the old-fashioned clamp the resulting scar is always in evidence and the operator need have no doubts, but if done with the emasculator or similar methods the cicatrix is hardly discernable and its location becomes a question of doubt, and if not definitely ascertained the operator may be chagrined to find he has operated upon the wrong side. This fact is usually ascertained by finding the stump of the spermatic cord in the inguinal canal. However, this is not always definitely determined, especially if the animal has been castrated young, and the spermatic cord atrophied to the extent of not being perceptible to palpation, then the operator only discovers his error after penetrating the peritoneal cavity and failing to find the object sought. It is still of more importance to ascertain if more than one operation has been attempted. If a previous attempt to remove the hidden testicle has been made, the operator is then confronted with two scars. Even then he may be able to determine upon which side the hidden testicle lies from the character of these scars. For instance, the normal testicle removed may have been by clamp, which would indicate, as before stated, upon which side to operate. But it often occurs that the scars of the previous operation are of such similarity, and the history of such operation obtainable is of such uncer-

tain character, and manipulation of the inguinal region not always giving definite results, owing to cicatricial tissue caused from previous operations. It necessarily follows that the operator is entirely ignorant as to the side upon which he will find the testicle. His only recourse then is to resort to rectal exploration, which may reveal the location of the hidden testicle. The objection to resorting to rectal examination is that it infects the operator's hands, rendering them unfit for immediate operation. When one has his case close at hand this procedure is well enough, but with the operator twenty miles from home it is out of the question. Therefore, my method is to proceed with the operation, and, if failing to find the object sought, immediately operate on the other side.

For myself, I have found no bad results from a double operation. In this connection it is well to remember the fact that the greater per cent. of cryptorchid testicles occurs upon the left side. I believe some writers say as high as seventy-five or eighty per cent. are on the left side, and my own experience verifies this statement. This being true, it would be the part of prudence, in these doubtful cases, to operate upon the left side.

Again, the finding of a supposed stump of the spermatic cord in the inguinal canal may lead the operator into an error, for it sometimes occurs that a loop of said cord or the vas deferens may pass down into the canal, but the testicle remain lodged in the ring.

To differentiate this condition from a stump of the cord requires careful manipulation. If it be a cord the cicatrix of the free end may be discernable. If a loop of cord, or vas deferens, the loop may be determined by manipulation and the operator proceed accordingly.

(5) In selecting a place to operate we seek to avoid as near as may be all possibility of infection. Therefore, always avoid barn-yards, stalls or sheds, even though roomy and apparently clean. The ideal place, always obtainable on every farm, is a clean, grassy plot of ground where no dust or refuse matter will be stirred by casting and confining the subject. Clients

often suggest old straw stack bottoms as a suitable place, or the bedding down of a place with straw, all of which should be avoided. All straw is more or less dusty, hence dangerous.

(6) The mode of casting and securing our subject for this operation has for its principal object the rendering accessible of the inguinal region. A proper exposure of this region is of the highest importance to the operator. For this purpose the old-fashioned side-lines are perhaps preferable, although many operators use various casting lines, all of which are useful. Familiarity with the use of these casting methods counts for more than the kind of apparatus used.

(7) Upon this necessary adjunct of all surgery no new features apply to the cryptorchid operation, only those incident to the surrounding circumstances. However, I wish to say: the country veterinarian doing a general practice, and especially at the season when most of the cryptorchid castration is done, is called upon to do a great deal of obstetrical work and many other surgical operations that render his hands anything but aseptic. Therefore he must necessarily use extraordinary precaution disinfecting himself before attempting the operation under discussion.

I have made it a rule never to operate upon a cryptorchid the same day after attending an obstetrical case, or other work likely to render the hands septic, believing that thorough washing with disinfectants alone is not sufficient, but, rather, that time with exposure to the oxygen of the atmosphere is also necessary to render septic hands aseptic.

Another matter in this connection: The busy veterinarian, with no assistant, usually has to apply the casting harness and take the principal part in restraining the subject. Said harness usually becomes filthy by contact with the ground, and if handled prior to the operation is a source of danger. When one has no competent assistant this danger can be partly avoided by wearing gloves during the application of the harness.

For obvious reasons hospital methods for preliminary disinfection are impractical. Therefore, the operator must be as

thorough as possible in his attempt to render himself, instruments, and the point of operation, as well as adjacent surroundings, aseptic immediately prior to operation.

(8) I shall not enter into a discussion of the anatomy or *modus operandi* of the operation. I only wish to make a few remarks in relation thereto which past experience has suggested.

Do not try how quick you can perform the operation, but how well.

One is liable to be flattered by praise of rapidity with which he operates, thereby failing to use his better judgment and caution, for errors can be made in haste which might do irreparable damage to the subject and to the operator's reputation.

To illustrate this I will give a case: Was operating upon a large two-year-old, which I thought I had confined properly, and was proceeding with the operation to the point of puncturing the peritoneum, when a sudden struggle of the subject caused me to insert my whole hand into the abdominal cavity, thus causing a very dangerous hernia, which fortunately caused no serious difficulty in this case.

Therefore it will be well for the operator to be on his guard at this particular point of the operation, especially in young animals in which the abdominal walls are very thin. And if the subject struggles, withdraw the hand a little ways until the struggles have ceased. He can then usually complete the operation before the animal makes another such effort.

(9) The best after-treatment and conditions for the colt of one or two years of age is giving liberty in pasture with stabling nights or during inclement weather in a clean stall when obtainable. But so often these favorable conditions are out of the question, or the stall given colts on the farm are of such unsanitary nature, that it is hazardous to place them therein for even the shortest time. As a rule, the pasture affords the most favorable surroundings for these cases.

But the older animal, whose amorous propensities make it unsafe to give him liberty immediately after operation, a clean stall must be provided, where it is well to tie the head high to

prevent lying down for a few hours following the operation. This latter especially applies where the operation has been a difficult one, and the opening into the abdomen has been necessarily large. By this means we seek to avoid a hernia, of which there is not so much danger after a few hours, owing to the swelling of the operative wound.

These older animals can be usually given light exercise in harness, which is the best after-care to running in pasture.

The operative wound may need some after-care in some cases, but owing to distance and time consumed cannot often be given by the veterinarian, and I seriously question the advisability of leaving instructions for the owner or attendant to open, wash or lubricate the wound, for it has been my experience, oft-times repeated, that where such instructions have been given I have had a troublesome after-infection to deal with, caused, as I believe, by dirty fingers being inserted into the wound, or by the use of an old filthy syringe. Therefore, the operator should be scrupulously cautious and careful to do an aseptic operation and then trust to nature to take care of the wound rather than allow interference that may cause your patient and yourself unnecessary trouble.

To summarize these few rambling remarks, to be a successful cryptorchid operator :

First, operate only upon a healthy animal, amid the most sanitary surroundings obtainable.

Second, when possible operate when one or two years of age.

Third, when possible have your case previously prepared for operation.

Fourth, obtain all the history of your case before operating.

Fifth, select the cleanest place obtainable for operating.

Sixth, always secure your patient properly before beginning the operation.

Seventh, spare no pains in rendering your patient and yourself as aseptic as possible.

Eighth, operate carefully.

Ninth, give the best after-care possible.

PUNCTURED WOUNDS OF THE FOOT.

BY THOMAS FARMER, V. S., GRAND BLANC, MICHIGAN.

Read before the Michigan State Veterinary Medical Association, February, 1907.

It seems as though there could not be anything new advanced on this oft-debated subject. I will say that by reading some papers printed in the journals giving very elaborate details of the procedure of operation, it would seem a very serious and complicated task. Now, I never have had very much trouble with nail punctures. Perhaps one reason is, I get them sooner than I would were I not living in close proximity to a horse-shoeing shop, and, having been a practical horse-shoer myself, they naturally come to the shop whenever a horse is taken lame, so that I generally get them before the owner, if a farmer, applies his excelsior poultice. You all know what it is; comes all ready prepared and deposited in the cow-barn or barn-yard; everything favorable to germ life is being provided for, not only in this particular poultice but others as well. I have in years gone by used poultices, but have relegated them among the has-beens. Did you ever see a cut on the limb heal while poulticing? I never have; then, why poultice the foot? The use of caustic irritants in punctured wounds is another source of delay in healing wounds of this nature; it is positively detrimental, as they cauterize the external opening of the wound and imprison the pus, which is sure to form if the opening is closed, and in this way compelling the pus to seek an opening between the hard and soft soles, and most invariably finds its place of exit at the heel. When the practitioner gets the case at this stage he is told that a gravel has worked out there. In this case, make an opening in the sole and you will always find a plentiful supply of pus. Inject into the upper opening a solution of creolin to wash it out; use it freely. Afterwards use a 5 per cent. solution of carbolic acid and glycerine. When you get the case when it first happens, remove the nail if it is there; make a good large opening; don't be afraid of a little blood; that is one great fault of the horse-shoer:

he is too much afraid to make a free opening. If it is cold weather, soak the foot for half an hour in warm water; if in hot weather, soak an hour or two in cold. The reason for this is that it gives comfort to the animal, and not for any remedial action. Then inject with the carbolic acid and glycerine solution.

Cases treated in this way rarely reach the suppurative stage. If a work-horse, take a piece of band iron, one-half or two inches wide, rivet it across the shoe directly over the opening; you can then fill it with absorbent cotton saturated with your disinfectant, which the owner can change every day with very little trouble. In this way the horse need not be laid off from work.

When a horse comes to you for examination for lameness, examine the foot; he may not show any signs of tenderness on percussion, but take your hoof knife and pare the sole carefully, as he has probably stepped on a board with a projecting nail; if such is the case, you will find a small dark speck hardly perceptible; follow this down and you will invariably find that it has pierced the sensitive sole.

A few years ago, when they used the old-fashioned cut-nails, they would break off and remain in the foot. Once in a while we find them now, but not very often. In a case where the joint is punctured, I make a cone-shaped opening, quite large; apply the glycerine solution; if much pain add tincture opii. Then fill the cavity with powdered oxide of zinc and charcoal, about 1-7, changing twice a day. If you have not already tried this treatment, try it, and I think you will like it.

"THE REVIEW is the best veterinary journal that has ever been published."—(*E. H. Morris, V. S., Derby, Conn.*)

THE world's milk record has been broken by "Dolly Bloom," a Guernsey cow, whose owner has been made richer by 17,297.51 pounds of milk, or about 2023 gallons, during twelve months recently completed. The record is official and is promulgated in the report of Wm. H. Caldwell, Secretary of the American Guernsey Cattle Club, at its meeting in New York City last month.

TREATMENT AND PREVENTION OF BOVINE TUBERCULOSIS.*

IMPORTANT STEP TAKEN BY THE ARGENTINE GOVERNMENT.

TRANSLATED BY DR. WILFRED LELLMANN, PROFESSOR AT NEW YORK UNIVERSITY.

In order that the Argentine Republic might profit by the new discoveries in the treatment of tuberculosis, Mr. Ezequiel Ramos Mexia, Minister of Agriculture at Buenos Ayres, in July, 1906, requested our *confrère*, Prof. J. Lignières, Director of the National Institute of Bacteriology, to make the following proposition to those investigators who had studied this subject :

"The Government, at its own expense, places at the disposal of the scientists possessing an efficacious remedy against tuberculosis highly valuable brood cattle imported from Europe, which are generally slaughtered, because of their reacting to tuberculin."

These animals, the average price of which is 10,000 francs, and among which at times are champions of the first class, were bought in England at 40,000-50,000 francs; they are apparently in excellent health, well taken care of, and their tubercular lesions are mostly minute. It is evident, that if a treatment be at all efficient, it should be so in these animals. It would be an entirely different matter, if it were a question of curing some emaciated consumptive cows, with lung cavities and extensive lesions.

Of all the scientists called upon by Mr. Lignières, in France, Germany, Italy and Belgium, so far only Professor von Behring has accepted the proposition of the Argentine Government. The latter at first was interested only in the curative treatment of tuberculosis, but upon the urgent desire of Professor von Behring consented to test his Bovovaccine at the same time. For this reason, articles 9 and 10 have been added to the fol-

* From *Recueil de Médecine Vétérinaire*, March 15, 1907.

lowing contract. From article 4, it can be distinctly seen that the door is left open for other experimenters.

CONTRACT.

The following has been agreed upon between the Minister of Agriculture, party of the first part, and Prof. von Behring, party of the second part :

(1) The Argentine Government, desiring to utilize the imported animals which have responded to the tuberculin test and which at present are slaughtered as tuberculous, without yielding any profit, agrees to establish, under its direct supervision, a hospital for stalling these animals. All or a number of these are placed at the disposal of Prof. von Behring, who agrees to apply to them his curative method which, experimentally, has proved efficient in guinea-pigs, sheep and cows.

(2) Prof. von Behring agrees to send his first assistant, Dr. Paul Rømer, to Buenos Ayres, to apply his curative treatment to the imported tubercular cattle. The duration of Dr. Rømer's mission will be one year.

(3) As remuneration Dr. Rømer receives, at the time of signing the contract, and for traveling expenses to Buenos Ayres, the sum of M. 2,000. From the day of his arrival at Buenos Ayres, he will receive a monthly salary of 1,000 piastres, paper money. After the termination of his mission, Dr. Rømer will receive 1,000 piastres, to defray his return traveling expenses.

(4) Dr. Rømer, acting according to the instructions of Prof. von Behring, will be the sole judge of the nature, the manner, and the intensity of the treatment. He cannot demand the placing at his disposal of all the imported animals reacting to tuberculin, but simply a number of them. The right to control the course and the results of the experiments is vested in a special commission appointed for this purpose by the Minister of Agriculture. In no case has this commission the right to control the manufacture of the remedy, nor can the commission demand that the remedy be put at their disposal.

(5) When, according to Dr. Rømer's opinion, the treated animals are to be considered as practically cured, he must furnish the proof to the commission, and if the commission be convinced of it, the cured animals will be delivered to their respective owners, and their state of health will be controlled from time to time, under the supervision of the said commission, for a period of three years. A certain number of the treated animals will be killed and autopsies performed before the commission, when Dr. Rømer must demonstrate the results of the treatment. Finally, some of the breeding animals will be killed, to serve as controls, without having received any treatment whatever.

(6) The Argentine Government agrees to pay for the curative product at the rate of 1 piastre, paper money, for every injection, on the condition that the total treatment of each sick animal ordinarily will not exceed ten injections.

(7) In case the Argentine Government or Prof. von Behring should consider the continuation of Dr. Rømer's work until the end of the year inadvisable, the present contract will be cancelled, neither party being entitled to indemnification, excepting the 1,000 piastres provided for as the return passage of Dr. Rømer.

(8) Whether the mission has lasted a year or not, and if the results have proven the efficacy of the treatment, Prof. von Behring agrees to have the Argentine Republic profit by his remedy, after the departure of his representative.

(9) Besides what is agreed upon in the foregoing, Prof. von Behring agrees at the same time to have his Bovovaccine tested by Dr. Rømer, on animals to be furnished by the Argentine Government, and particularly reserved for this purpose. The Bovovaccine used for these experiments will be paid for by the Argentine Government.

(10) The program of the Bovovaccination experiments will be agreed upon in advance and must receive the approval of Prof. von Behring.

Berlin, February 12th, 1907.

In conformity with article 10, Prof. Lignières has drawn up the following program, accepted by von Behring, and which, together with the preceding contract, signifies the thoroughness and the importance of the experiments to be made at Buenos Ayres:

“Program of Bovovaccination Experiments to be made in the Argentine Republic as per agreement between the Argentine Government and Prof. von Behring, and according to which the Government is to place at the disposal of one of my collaborators (Dr. Rœmer) 200 head of cattle. Calves at the age of from 20 days to three months, coming from non-tuberculous herds, and which have not shown the slightest reaction upon a previous tuberculin-test, are to be bovovaccinated.

“A first series includes 50 animals, 20 of which are to serve as controls, while 30 will receive the first vaccine at the hands of Dr. Rœmer. The first vaccine will also be injected, by the commission, into test animals, especially guinea-pigs, in order to ascertain its degree of virulence. After the first injection, the control and immunized animals will be left together under natural conditions of life, but without contact with other cattle. After three months the 50 animals will be tuberculin-tested; thereupon two of the vaccinated animals will be killed, dissected, and experiment animals inoculated with some of their organs, no matter whether the latter are healthy or not. Immediately afterwards, the remaining 28 immunized animals will receive the second injection at the hands of Dr. Rœmer. The second vaccine will be injected into experiment animals under the same conditions and for the same purpose as the first vaccine. The immunized and control animals will then remain together under the usual conditions of life. Three months after the second vaccination, all living animals of this test-series will be submitted to a new tuberculin-test. As soon as the results are known, two of the immunized animals will be killed, dissected, and susceptible experiment animals inoculated, by the commission, with their organs, whether healthy or not. At the same time—namely, at least six months after the second

vaccination—the remaining 24 immunized and the 20 control animals will be subjected to an immunity-test with bovine tuberculosis virus, by the commission; 5 immunized and 5 control animals will be injected intravenously; 5 immunized and 5 control animals will be injected subcutaneously; 14 immunized and 10 control animals will be placed in a separate stable and brought into immediate contact with tuberculous cattle (infection by contact). Six months after the immunity-test, all living animals will receive a tuberculin injection; hereupon 2 immunized and 2 control animals injected intravenously, as well as 2 immunized and 2 control animals injected subcutaneously, whether reacting or non-reacting, will be killed. As regards the animals exposed to natural infection, only those showing pronounced tuberculin reaction will be killed. One year after the immunity-test, the remaining animals will again be tuberculin-tested, and hereupon 2 animals injected intravenously, 2 animals injected subcutaneously, and 2 control animals dissected, whether they have reacted or not. Also 2 of the animals exposed to natural infection. Lastly, 1½ years after the immunity-test, that is, at least two years after the first vaccination, all remaining animals will be killed after a previous tuberculin-test. After each dissection, the commission is to inoculate susceptible experiment animals with tuberculous-looking and tuberculosis-suspected (?) organs.

“The second test-series also embraces 50 cattle, which, however, are placed in a different stable, and the vaccination of which will be begun four weeks later than that of the first series.

“In the third test-series of 50 cattle vaccination will be begun four weeks after that of the second series, and again at another place. But in all three series, the order of experiments will be the same.

“A fourth and last test-series will consist of thirty cattle, ten of which will be vaccinated at the same time as the first series; ten together with the second, and ten together with the third series. These test animals will not be subjected to any

tuberculin-test and are to be kept under natural conditions of life. A year later, ten of these animals will be tuberculin-tested and afterwards subjected to an immunity-test, together with control animals. The same experiment will be repeated, two years after the preventive vaccination, with ten other bovo-vaccinated animals. After three years, the last animals are to be tested in a similar manner, with tuberculin and afterwards by experimental infection with bovine tuberculosis virus. In order to facilitate the tests, the animals to be dissected will, if possible, be shipped to Buenos Ayres to be slaughtered.

"The cattle of each test-series will be under the observation of two veterinary surgeons appointed by the commission. These gentlemen will keep an accurate record of their observations as regards the state of health of the animals. J. LIGNIÈRES.

"Paris, February 1st, 1907.

"In connection with the foregoing program of experiments, it is understood that I have the right to use vaccines for the first test-series which were produced at Marburg and shipped to Buenos Ayres; for the second test-series, fresh vaccines made by Dr. Röemer at Buenos Ayres; and, lastly, for the third series, a single vaccine in place of two. (Signed) E. V. BEHRING."

"Marburg, February 14, 1907."

We shall keep our readers posted concerning these experiments. Meanwhile, we can confirm, that contrary to circulating reports, Professor von Behring is in excellent health, and that he has not left Marburg, where he is assiduously at work in his laboratory.

THE Manila (P. I.) *Cable News* of March 11 contains a photo and biographic sketch of Dr. R. H. McMullen, who left the Philippine Islands on that date for the United States, to accept an appointment on the staff of the Bureau of Animal Industry. An item in this journal for May stated that he had been assigned to duty at Milwaukee, but we have since learned that he is with the force at the Union Stock Yards, Chicago. The article above referred to pays a high tribute to the Doctor for his valuable services while veterinarian of the Port of Manila, and in his special work in eradicating rinderpest from the Archipelago.

MODERN VETERINARY METHODS.

BY WALTER J. TAYLOR, D. V. M., ITHACA, N. Y.

KINDS OF IMMUNITY.

Natural Immunity.—The term natural immunity has been applied to that condition or ability possessed by some races or species of animals that enable them to resist the natural invasion of infecting organisms that attack other varieties or species of animals. In so far as we know, it is a condition inherent in the very nature of the individual, born with it and transmitted to its offspring.

There are a number of very striking examples of natural immunity. The Algerian race of sheep are immune to natural infection of anthrax, whereas other sheep are very susceptible to it. The equine species are susceptible to glanders, but the ruminants are immune. Black-leg, which is very destructive to cattle, does not attack horses, the carnivora or man. There are, however, instances where there seems to be general immunity, but where individuals are occasionally attacked. Thus, it is not usual to find tuberculosis in the carnivora, but now and then a cat or dog is found suffering with the disease. While it must be admitted that all species may be infected with tuberculosis, there is much evidence to show that certain species are immune to it.

It sometimes happens that individuals belonging to a susceptible species resist infection. These are spoken of as possessing natural immunity; but this is not a satisfactory explanation, for in such cases it is practically impossible to state whether it is natural or acquired. In the present state of our knowledge of this subject it seems better to allow such cases to remain as examples of individual resistance. It has also been found in cases of marked natural immunity the resistance can be overcome and the animal infected by changing its normal physical condition.

Explanation of Natural Immunity.—There are a number of explanations of this phenomenon. In brief, they deal with the supposed actions (1) of the cells of the body, and (2) of the serums or humors.

Those who seek the cause for this condition in the cells find that phagocytosis, so ably described and demonstrated by Metchnikoff, is the source of the individual defence. Those who find the cause in the humors of the body rely upon the

germicidal action of the serum itself or of the substances set free from the cells that are present in the liquids. Metchnikoff seems to believe that the microcytase elaborated from the leucocytes acts as a solvent directly upon the bacteria.

The lateral-side-chain theory of Ehrlich assumes that the cells of certain animals do not possess the necessary combining molecules (receptors) with which the haptophore group of the atoms of the toxin molecule could unite, thus the destructive action of the toxin upon the cell is prevented. This theory refers the immunity to the resistance of the animal tissues to the toxine. A study of the subject, however, shows that while many interesting facts have been brought to light, a satisfactory explanation of the cause of natural immunity has not appeared.

Artificial Immunity.—As the term implies, this is immunity brought about in the individual after birth. The most common form is found in the individual that has survived an attack of an infectious disease. The most striking examples of this are cases of recovery from small-pox and yellow fever in man and Texas fever in cattle. All of the exanthematous diseases leave the individual with more or less immunity. In some other infectious diseases, like tuberculosis, there seems to be very little, if any, increased power of resistance imparted to a patient who has recovered from the first attack. In such acute diseases as diphtheria, the duration of the immunity resulting from a natural attack of the disease is somewhat variable. In artificial immunity there is great variation in the period of duration.

The fact that individuals that had passed through certain diseases were rendered immune, led Pasteur, Salmon, Smith, and others to inquire into methods for artificially immunizing animals against the infectious diseases most destructive to them. The first experiments of this kind on animals appear to be those of Pasteur, who found that inoculating animals with attenuated virus would immunize them against inoculation with a strong virus or naturally acquired infection. He promptly succeeded with swine erysipelas, chicken cholera and anthrax. Later he succeeded with rabies. Arloing, Cornevin and Thomas and Kitt introduced a successful method of preventive inoculation with attenuated virus against black-leg. The method has been tried with a number of other diseases with less satisfactory results.

The next procedure was a line of investigations directed toward the production of immunity by the use of toxins or heated cultures of the bacteria. The first of these was an im-

munization of pigeons against hog cholera by the use of heated bouillon cultures of the bacillus of hog cholera by Salmon and Smith in 1886. This method was followed by similar results by Pasteur with chicken cholera. This line of investigation led eventually to the immunizing of animals experimentally with the toxins of heated cultures of certain virulent pathogenic bacteria, such as diphtheria and tetanus.

It has been found that the blood serum of animals that are immune to certain bacterial diseases possess antitoxic properties by which it is able to impart immunity to healthy susceptible animals, or to act as a therapeutic agent for those affected with the same disease. Diphtheria is the most striking example.

Toxic Immunity.—This form of immunity in an individual is due to the presence in the body of an antitoxin. Whether acquired through natural or artificial conditions, there appears to be a sufficient number of free receptors or antitoxin molecules already present in the body to neutralize or lock up a like number of toxin molecules which may be introduced and thus prevent harm being done to the tissues.

Bacterial Immunity.—Bacterial immunity is due to the presence in the body of a substance of bacteriolytic nature. That is, a substance which is capable of destroying bacteria when introduced into the body. Thus it has been found that in cases of immunity against diseases of bacterial origin that if the specific microorganism capable of producing that disease be introduced into the body the organisms swell up, become granular and finally disintegrate and disappear. This has been especially well demonstrated with patients known to be immune to the cholera vibrio. This condition is known as Pfeiffer's phenomenon.

Methods for Artificially Producing Immunity.—The present knowledge of the subject shows that immunity may be produced in several ways other than by causing the individual to pass through an attack of the disease caused by natural infection. Summarized briefly these methods are as follows:

1. By inoculating the individual with a non-lethal dose of a strong virus. This is practiced in immunizing cattle against Texas fever, sheep-pox and contagious pleuro-pneumonia.

2. By inoculating the individual with attenuated virus. This is practiced in anthrax, black-leg, chicken cholera, *rouget*, rabies and bubonic plague in man.

3. By inoculating the individual with vaccine consisting

of the virus of the disease modified by continual passage through another species of animal, as vaccine for small-pox.

4. By the injection of toxins. In practice this is used for immunizing animals such as horses against the virus of the diseases for the purpose of procuring antitoxin from their blood, as in diphtheria and tetanus.

5. By the injections of antitoxins. These are used to immunize animals against toxins, and children against natural infection, as in diphtheria.

Depending upon the method by which artificial immunity is produced, the immunity thus secured is spoken of as active or passive. These together with protective inoculation will be treated next time.

CALIFORNIA'S NEW VETERINARY LAW.—An act has passed the California Legislature and was approved and signed by the Governor on March 23d, establishing a Board of Veterinary Examiners and otherwise considerably enlarging and improving upon the old law of 1893 and its amendment of 1903. Every applicant for a license must be a graduate of a recognized school having a term of at least two sessions of six months each and must have been in actual practice for at least five years prior to the application. It includes under its terms every branch of veterinary medicine, there being no escape from its provisions through misleading titles, such as "veterinary dentist," "veterinary farrier," etc. While it is to be regretted that it failed to make the three-year college its minimum acceptance, it contains so many improvements over its predecessors that the profession should feel that distinct progress has been made upon the Pacific Coast, and hope that a future amendment may close the door against this discredited diploma. All violators of the law are made guilty of a misdemeanor, punishable by a fine of not more than \$200 or imprisonment in the county jail not longer than six months, or both fine and imprisonment. The Governor has appointed the following veterinarians upon the Board of Examiners: Drs. David F. Fox, Sacramento; Ward B. Rowland, Pasadena; T. W. Orme, San Bernardino; E. J. Creely, San Francisco; and R. A. Archibald, Oakland. The Board will hold examinations in January, April, July and October of each year, and they are authorized to arrange reciprocal relations with other state examining boards so that licenses may be mutually recognized.

REPORTS OF CASES.

"Careful observation makes a skillful practitioner, but his skill dies with him. By recording his observations, he adds to the knowledge of his profession, and assists by his facts in building up the solid edifice of pathological science."

SUCCESS AND FAILURE.*

By C. C. MILLS, V. S., Decatur, Ill.

Success and failure are not widely separated. They represent opposites, but the one is so often turned into the other by so little effort or so slight a circumstance that the conservative professional man develops a large measure of caution. What constitutes a success from the scientific or clinical point of view may not be the success which brings profit to our patron in every instance. We meet cases every day in which we are compelled to advise from the standpoint of the actual cash value of our work to the owner of the patient. A patron of mine says: "My horses are slaves. I have no earthly use for them or consideration for them, except for their capacity to earn the dollar for me. When they fail to do this with certainty I am done with them." To many owners of faithful animals and to those of us who are controlled somewhat by sentiment, perhaps this declaration may seem a little harsh. As a matter of fact, it is, after all, the basis, in a more or less modified degree, upon which we are called upon to consider the application of our profession in at least nine cases out of ten. The value of a horse presented for treatment must usually be taken into consideration as well as and in conjunction with the disease or injury or blemish. The veterinarian will be called upon in one day, and perhaps with the same patient to pose at the horse market, to picture the ills of an animal from unspoken and possibly misrepresented symptoms, and to render a prognosis which varies in demands from the length of time the patient will be out of work to how much he will be worth when he recovers. Upon his aptness in handling these inquiries will depend largely his success or failure, with some patrons at least, equally as much as upon his skill as a surgeon or his ability as a diagnostician and prescription expert.

I feel assured, however, that your experience coincides with mine in that many cases are presented which give little prom-

* Presented to the Illinois State Veterinary Medical Association, July 12, 1906.

ise of results which still make one feel that a trial would not be devoid of interest. However, even a successful isolated case does not prove a procedure or an operation practical, but a summary of all similar results, or a suggestion for a future trial, may yield something definite. It was with this idea in view that I undertook the operation which I am about to report and which I termed

A RADICAL OPERATION FOR DOUBLE NASAL PARALYSIS OR
COLLAPSE.

The subject was a gray mare, perhaps ten years old, and was brought to me with the history that symptoms of collapse over the false nostril had been noticed for at least six weeks or two months. A qualified practitioner had prescribed treatment about three weeks previously. This consisted of stimulating liniment applied over the face and affected region. The mare continued to grow worse and was presented to me for examination April 17, 1905. I gave my opinion that there was but little chance for recovery, as I had previously had some very unsatisfactory experience with double facial paralysis. The owner could ill afford to lose the mare, as she was one of his only team. He had not owned her long before these symptoms first appeared, but had known her for several years previously. At this particular time the animal showed very slight falling in of the skin over the false nostril at each inspiration while quiet and the nostrils would neither distend widely nor collapse materially. Upon a brisk trot or pull or up hill travel the depression over the false nostril was quite marked and the nasal cavity near that point almost occluded; the paralysis of the muscles allowed almost complete collapse of the alar cartilages and consequent severe dyspnoea.

The owner insisted on a trial treatment. Having had no results in previous cases from the administration of strychnia hypodermically over the facial nerve and its branches, I did not resort to it in this case. I prescribed nux vomica and ipecac internally, and Fowler's solution in increasing doses in the feed. In two weeks she was again presented, with no signs of improvement at least, and I directed that she be turned upon pasture, as she could not stand work at all.

I had given an unfavorable prognosis, but in the course of conversation I had mentioned the possibility of making an artificial opening into the nostril at the point of greatest depression to arrest the collapse by admitting the air, but without much thought of the method to be employed or much expectancy for

an opportunity to try it. The middle of June found the paralysis still more marked and the mare practically useless for driving or field work. She was brought to my infirmary by the owner with the determination for an operation if anything could make her even useful. I gave her as close observation and study as possible for a number of days in my hospital for the purpose of deciding upon the best method and awaiting an opportunity to operate. When satisfactory opportunity offered, the ordinary antiseptic precautions were taken and an elliptical section of skin, $1\frac{1}{2}$ inches to $1\frac{3}{4}$ inches long and $\frac{1}{2}$ inch wide at its greatest width, was removed, making an opening into the *cul-de-sac* or false nostril. The inner border of the incision was made conveniently near the outer border of the nasal peak, and its extending cartilage and the outer lip of the incision correspondingly near the maxillary bone and the alar cartilage. Then the inferior or dividing wall of the false nostril was also divided at as great a length as possible, and a little of the borders of the incision removed near the middle. This last incision you may note extended close to, and nearly parallel with, the upper border of the superior part of the alar cartilage, for perhaps half the length of the incision. Only enough border of the lining of the false nostril was left next the cartilage to retain stitches in suturing. With forceps and needle then the corresponding borders of the incised *cul-de-sac* and the skin were brought together tightly with numerous sutures, bringing their fresh raw edges in apposition. Without further prolonging the description, you will readily see that these openings thus made served a double purpose of admitting air into the nasal cavity above the collapsed portion, and also to forcibly elevate and retain the superior part of the alar cartilage. I kept the patient under my care for several days and union took place largely by primary adhesion. The mare was trotted up and down with ease, and was soon ready for work with but little further attention. Dyspnoea was but very slight, and while there was still noticeable an attempt at collapse, yet she was put to the plow and kept steadily at farm field work, where she had proved useless before. In sixty days she was reported much improved, in the owner's opinion, and three months after the operation an examination was given and the artificial openings were plugged with absorbent cotton, with no interference in breathing and no collapse as formerly. The edges of the original incisions were scarified and drawn together by sutures and covered with absorbent cotton and collodion. Union took place, but with some

little difficulty on one side, on account of the patient interfering by rubbing. Patient still continues well.

Now, the demonstration was clear as far as immediate results for work were concerned, but did the operation have anything to do with the ultimate recovery?

A CASE OF MYSTERY.

Now, I have a blank failure to present, with your indulgence, and solicit your free expression of opinion. It is not my only failure, by any means. A more complete failure, perhaps, is not frequent, for in this one I failed either to diagnose the case or to derive any known benefit from treatment administered by me, and then finally was even foiled from an expected opportunity for a post-mortem examination.

This patient was a grey gelding, 8 or 10 years old, and the property of an energetic teamster without feet. April 14, 1906, this case was described to me as having had distemper for two weeks, coughing considerable, discharging at the nose, and occasionally being delicate about eating. On this date he refused to eat his morning feed, looked a little dull, slabbered and coughed considerably at intervals. Owner wanted medicine for cough, and it was given after bringing out the above data. If he had been given anything previous to this I could not find it out, but I suspicioned that tar or coal oil had been administered. I have no evidence that such was the case.

April 16 the patient was presented for admittance to the hospital. A careful examination was made. Temperature was found to be normal, pulse good, full and strong, with pulsations about 40 to the minute. Respirations not labored nor accelerated beyond what slight exercise would produce. Parotid and maxillary glands not noticeably thickened. Extremely slight traces of the catarrhal trouble from which he probably had originally suffered. No discharge from nose, no fœtor of breath, no soreness on pressure at throat. Bowels slightly constive. Gave a guarded opinion, but expressed my belief that the trouble was a sequel of the influenza attack; influenza having been quite prevalent with numerous aggravated complications. He was given a roomy box stall and the owner told that he would probably be all right in a few days. He would munch a little at his feed and then stand with head and neck drooped. The lungs appeared clear, and no grunt nor irregular pleural sounds could be detected. There was no stiffness and no tucking at the pleuritic line. Ears were a little drooped outward, and occasionally the horse would paw with a slow raking mo-

tion. His mouth and lips, from external appearances, were no more than normally moist, and there never was any constant drooling of saliva. At intervals, however, of from one-half to three hours, according to the particular day, he would open his lips, work his tongue and jaws a little, and a great quantity of saliva, as white and foamy as soap suds, but with more consistence but not stringy, would literally fall in bunches from his mouth. In a minute the usual position was assumed again. Horse remained standing most of the time, but frequently laid down, and often stretched himself upon his side and apparently rested comfortably. He never rolled or exhibited signs of distress while down. Patient was given an aloes physic and was placed on tonic treatment with stimulants. *Nux vomica*, gentian and alcohol were given. In a few hours he was eating hay with quite a little relish. The next day he almost refused to eat any dry feed or attempted to eat more than a mouthful or two of anything. He would eat grass if a little was brought to him; and was taken out to graze for a little while each day. Picked fresh grass very nicely. Foregoing symptoms continued with alternating periods of slight improvement and a fair appetite to complete loss of appetite and persistent recurrence of the above-noted perplexing manifestations. A mouth speculum was adjusted and the mouth manipulated and examined by the hand even into the throat. No obstruction, no ulceration and no soreness was found. Teeth were floated a little to remove all possibility of irritation from that source, but no sore gums or teeth were found. Hypodermic injections of strychnia were administered and repeated doses of whiskey were given with no better results. Then drachm doses of potassium iodide were given, but saliva continued to fall in wads to the floor, forming on some days a pool of foam. In desperation I administered drenches of bicarbonate of soda in liberal doses and gave four-ounce doses of raw linseed oil with half ounce turpentine, repeated two or three times a day. Pawing and slight distress followed the drenching process, for which he had no particular liking. No encouragement followed, and I informed the owner after six or seven days of my failure to get results, and told him if he wanted to have another doctor see him that I would not stand in the way. He declined, and I asked for a few days more to treat the horse at my expense, since the owner was such a cripple and yet worthy of assistance. The chance was cheerfully given, and sub-nitrate of bismuth was given in two and three drachm doses three times a day. On the 25th,

after ten days of constant treatment, the patient was discharged from the hospital while eating a little, but apparently no more permanently improved than the day he entered. He had lost quite a little in flesh. The temperature had been taken daily and was never elevated.

He was taken home and allowed to stand or lie about as he chose and he exhibited only a continuance of his former symptoms except that perhaps he would lie down more and stretch broadside upon the ground. I have it from the owner that after two or three days of this it occurred to him to give him coal oil. He promptly drenched him with a quart and went up town with the expectation, he says, of finding him dead on his return. On seeing him again in three or four hours, however, the patient was up and eating grass and dried weeds that had been cut and left lying about. Another pint of coal oil was administered that evening, and still another the next morning. The horse took to eating everything placed before him, the owner contends, and not long afterward I saw my patient at his former work on the streets. I have seen him frequently up to date and he continues well and hearty and never misses a feed and has regained his former flesh, but I am still as much in the dark as ever as to his ailment or the physiological action or medicinal value of the remedy applied so heroically.

MALIGNANT OEDEMA AND PARTURIENT PARESIS.

By C. E. McCALL, V. S., Roachdale, Ind.

In the March number of the REVIEW I notice reports of some interesting cases, namely, "Malignant Oedema," and two cases which reacted to milk fever treatment.

Having had some experience along practically the same lines during the past month it might be of some interest to readers of the REVIEW if I should report them.

Case I.—On March 20th I was called to see a large bay gelding, twelve years old, and weighing about thirteen hundred and fifty pounds, the owner stating that the horse had lain down upon a nail and he feared blood poison would develop if something was not done, as the leg was considerably swollen. When I arrived at the farm I found the horse standing in the driveway of the barn with the limb in a state of flexion and swollen to twice its normal size. The owner stated that upon the night of the 17th the horse had kicked a board off his stall, and the

next morning he had found it in his box with the nail protruding upwards; did not notice anything wrong with the horse until the morning of the 19th, when he noticed the limb was somewhat swollen in the region of the thigh. Upon examination he was unable to detect any abrasion of any kind and did not think much of it, but proceeded to bathe parts with hot water and salt. Upon arising on the morning of the 20th, the limb being enormously swollen, and causing considerable pain, I was called.

Upon examination I found a nail puncture in the region of the triiceps abductor femoris muscle about the level of the superior extremity of the tibia and about the middle of the thigh, from which was oozing a foetid bloody discharge. Upon palpation a hollow-like sound was audible. When pressed upon for quite a distance around the seat of infection a crackling sound was emitted, giving one the impression of a "quarter-ill" swelling. Further than this area the swelling was hot and doughy to the touch. The horse was very much averse to being moved, and when forced to do so there would be ejections of gas and bubbles from the puncture. Pulse full and bounding, sixty per minute; temperature $101\frac{1}{2}^{\circ}$; horse eating some, but remained standing continually, probably through fear of being unable to arise if down. Diagnosis: Malignant œdema. Prognosis: Unfavorable. Therapeutics: Made several pyro-punctures, from which exuded a foetid bloody discharge, containing gas and bubbles, opened puncture well by laying open to bottom with knife; flesh seemed to be in an advanced state of decomposition and easily broken down with the finger; bathed parts well and washed out punctures with bichloride hg. 1-1000; gave ferrous sulphate dried 3ss, pulv. cinchona bark 3ij, quinine sulphate 3ss, to be given every six hours, bichloride 1-1000 to be used locally three times a day.

Did not see horse again, but owner informed me the next morning that the swelling was increasing and that he did not think it would be of use to have me see him again. He reported the horse down and unable to arise that evening, seemingly in a great deal of misery, pounding his head against the sides of his stall and struggling violently. He died about ten o'clock the same evening.

Owner informed me afterward that he had never seen a horse suffer such agony, and that the whole quarter became gangrenous before he died and that the anus was swollen as large as one's head.

Case II.—The second case was that of a cow, nine years old, and in good condition, giving about twenty quarts of milk a day and apparently in the best of health; had not calved since the first days of August and was not with calf at the time.

I was called to see her on the evening of April 2d. The owner stated upon my arrival that the cow was apparently all right and had given the usual quantity of milk that morning and that he had not noticed anything wrong with her, but about the middle of the afternoon he had noticed her lying down in the pasture, when he called her preparatory to doing his evening milking. She paid no attention to him. When forced to arise she did so with great difficulty. Being close to the barn, the owner decided to get her in her box, but when forced to move did so with a great deal of staggering, and her gait was very uncertain.

Upon my arrival I found the cow lying down in her box with head held in the characteristic position and kink in neck always seen in milk fever before the comatose stage. Pulse not much affected; temperature $98\frac{4}{5}^{\circ}$, breathing about normal. When forced to arise made several attempts before doing so and when up staggered about box, having great difficulty in keeping her feet; did not remain up but a minute before going down again, seemingly exhausted. Milked udder dry and waited thirty minutes or three-quarters of an hour to see results. Cow seemed to be sinking rapidly at end of this time, lying upon sternum with head turned to side, nose resting upon ground in semicomatose condition. Declined to make any positive diagnosis, but inflated udder with sterilized air and tied teats with tape; gave hypodermic injection of strychnine, and awaited results. At the end of one hour she did not seem to be improving much; gave magnesium sulphate 1 lb., dissolved in one quart warm water, to which was added ʒi fl. ex. nux vomica, arom. spts. ammonia, ʒi . It being twelve o'clock, left spts. nit. aeth., ʒiij , fl. ex. nux vomica, ʒiij , to be divided into three doses and given every 4 to $4\frac{1}{2}$ hours in pint water. I left, stating that I would return in the morning. When I returned the owner stated that he had found the cow standing when he arose at 4 A.M. He removed tape from teats; she seemed just a little weak in hindquarters. At six she ate a gallon of bran and oats; at nine I gave her a bucket of water, which she drank, and ate several small ears of corn which were given her. Pulse, temperature and respirations normal. Turned her into pasture; she walked to foddering place and began

picking fodder, apparently all right. No further treatment after supply was exhausted.

I might say that the cow gave no milk of any note, and did not for almost a week, at the end of which time she began to increase in her flow and in a few days was giving as much as ever.

What was it? And what was the curative agent? Was it the milk fever treatment, or was it the other?

THROMBOSIS FROM A CLINICAL STANDPOINT.

By A. W. BAKER, V. S., Brasher Falls, N. Y.

In regard to the article in the April REVIEW on "Thrombosis," I will say that I was called to the town of Madrid, St. Lawrence County, about a year ago last December, and saw a brown mare, 16 years old, weight 1,200 lbs. This mare was and had been a family pet; she did farm work and was driven to town on an average of twice a week, single and sometimes with her mate.

History:—The year before the owner noticed that after cold weather came he drove her to Madrid one day and she was quite lame. She being with foal, he did not use her the rest of the winter. One veterinarian told him it was a spavin and advised him to let her run in the barn-yard or shed, which he did. She had her colt all right and raised it. The following fall, after her colt was weaned, he began to work her. That is the time she got so bad she went down on her way home in a team. The veterinarian told him it was azoturia; they let her rest, and in a half hour she was able to finish the rest of the journey.

Dec. 8 I was called, and had to drive five miles. On the way I questioned the owner about the case, and he gave me all the information he could. I had seen one case before having the symptoms he gave me. I thought it must be thrombosis. When we got to the farm I made an examination. Pulse normal (40), respirations 10 and temperature 100.1, health good. This mare had not been out of the barn since November 28. I remarked to the owner that if it was thrombosis to trot her out and she would not go far before she would show the symptoms. He trotted her to the halter about 20 rods and back to the barn. She showed lameness coming back; he put her in the barn; she was there just four minutes when she went down, laid there 22 minutes, then got up and it was time to feed for noon. She eat three quarts of oats, and appeared as well as ever. I advised him to kill her. He looked surprised to think that I should order her destroyed. I remarked that was all the cure

I could give him. He said that the veterinarian who diagnosed spavin would fire and cure her. I replied that it was impossible to cure her. I asked the owner if he noticed the perspiration when down and the hurried respirations and how the eyes appeared and the dilated nostrils. He said he noticed that each time she had an attack and only when she was driven, and it was worse each time. He asked if I could not do something for her. I informed him I could if he would get me a gun. "Why," he said, "that mare is worth \$150." I told him not to-day.

I think those cases cannot be mistaken after you see one case; it is as plain as a case of tetanus by the symptoms. The first case I saw a few years ago. It was on the road to the next town, on my way to Potsdam. A gang of Gipsies were encamped by the roadside, and the man had traded with them and started homeward; he had not gone over a half mile when the horse went down. I did not know what was at first the trouble. I thought it was sciatic rheumatism or lumbago; he tried to get the horse up, but could not. I told him to let him rest; in the meantime I injected 10 grains of sulphate of morphine in the hip; in ten minutes he was on his feet; he led him home. The farmer did not have the prize that he thought he had. I lost track of the horse afterwards. Now I think I can tell a case just by the appearance of the animal when he goes down.

The Madrid farmer had his mare shot; he would not dispose of her. The owner's name was John Hunter, of Madrid.

[NOTE.—While the two cases recited are very interesting from a clinical standpoint, the value of each for record purposes is destroyed from the failure to hold a post-mortem to confirm the diagnosis.—EDITOR REVIEW.]

GALLOGEN FOR SCOURING ROAD HORSES.

By G. T. ELLIOTT, V. S., Bristol, Conn.

For some time having felt the need of an intestinal astringent which would not irritate the stomach nor become active until reaching the intestinal tract, it was with considerable interest that I read a description of Gallogen.

This drug is derived from the pods of a shrub growing in the West Indies and South America, the *Carsalpinia coriaria*, its acid being insoluble in water, alcohol and acids, and slightly soluble in alkaline liquids.

At once decided to make a trial on a very obstinate case. The subject was a nine-year-old mare, rather thin in flesh. For the past two years she had been almost useless for road work

on account of a catarrhal condition of the bowels, which caused her to scour profusely after having been driven two or three miles. Had pursued several different lines of treatment, but without success. Administered Gallogen, 3 iij, three times a day for four days, and after an intermission of one week repeated the treatment, since which time, about six months ago, she has been used constantly on the road with no recurrence of her former trouble.

In another instance a draft horse used on slow work and short hauls was presented for treatment. The owner reported that the horse had been scouring for six months, and that he had tried everything without giving relief. Gave him twelve 3 iij powders of Gallogen to be given in feed three times a day. The owner called five days later for more powders and reported a great improvement. A cure was effected before the second lot of powders was used, and since then, a period of seven weeks, the horse has been performing his regular work and improving in condition.

Have used Gallogen in numerous other cases and have yet to record a failure.

I trust that the publication of my experiences may be of benefit to other practitioners. Gallogen can be procured from C. Bischoff & Co., 451 Washington street, New York.

TWO IRREGULAR CASES OF PARTURIENT PARESIS.

By J. F. DEVINE, D. V. S., Goshen, N. Y.

No. 1.—A five-year-old grade Holstein. Calved 10 weeks previous; been in excellent health until this morning, when she is found down and comatose, with usual symptoms of parturient paresis. Diagnosed as such and udder inflated, leaving a heart tonic with directions to be given as soon as consciousness returned. Up and ruminating in four hours.

No. 2.—An eight-year-old Jersey. Aborted two days previous, being the sixth month of pregnancy (no mistake as to the period of gestation, since two small, hairless calves gave evidence as to its correctness), retaining the membranes and having eaten nothing since calving. Is now down with the usual symptoms of parturient paresis, coma being so profound as to make it uncertain at times whether or not respiration had been suspended. Same treatment as No. 1, and called again in three hours, when she was sitting erect; got up during the night, but was slow to convalesce.

ABSTRACTS FROM EXCHANGES.

ENGLISH REVIEW.

By Prof. A. LIAUTARD, M. D., V. M.

ULCERATION OF THE LARYNX [*V. S.*].—An old gelding is kept at regular work. One morning, while in harness and driven out, he is suddenly taken with violent roaring, stops, staggers and falls. Taken to the stable he is seized with violent cough, lasting some ten minutes. When he is seen, all the acute symptoms have disappeared. A diagnosis of spasm of the larynx is made and expectant treatment established. The horse was seen twice the same day and twice the next, but was always apparently well. The attendants reported, however, that he had had several attacks of very severe cough. Finally a mustard poultice was applied on the throat, at the earnest demand of the attendant. But as soon as the effects of the mustard began the horse suddenly fell down, and, after a short struggle, died apparently from suffocation. Post-mortem: All the organs normal except the larynx. Each vocal cord presented about the centre of its free edge, a small circular and apparently recent ulcer, about the size of a three-penny piece and penetrating through the mucous membrane. The two ulcers were in exact apposition, and the mucous membrane was congested. Lesions of glands were altogether absent.—(*Veterinary Record.*)

PAPILLOMATOUS TUMORS IN A BUFFALO [*Joachim Da Costa, G. B. V. C.*].—It is the record of a case in which the subject, a buffalo of five years, had a bunch of papillomatous tumors hanging from the right thigh, tumors which had grown very much lately and were interfering with the general health and also the usefulness of the animal. The mass was removed with an ordinary castration clam and cautery. It weighed six pounds and a half. Smaller growths existed on various parts of the body and were taken off with the knife.

NOTES ON INTERESTING CASES [*Hugh Begg, M. R. C. V. S.*].—At a meeting of an English society, the author related two interesting cases of complications accompanying castration. In the first case it was a two-year-old colt, which had not been operated upon before, because the owner had suspected him

suffering with scrotal hernia. Mr. Begg had examined him often and had never succeeded in discovering anything abnormal. He was then operated upon with all possible cares, and after he had gotten up, he was allowed walking exercise for a while and put in a comfortable paddock. Half an hour later Mr. Begg was called and found that four feet of intestines were protruding. To reduce these it was necessary to enlarge the internal inguinal opening. The wound was then well packed and the scrotum stitched. Complete abstinence was ordered, with the exception of a little chilled water now and then, and a small quantity of tincture of opium. The animal had some fever afterwards, but this subsided after a few days and recovery went on without any more trouble. . . . In the second case, that of a cryptorchid, there came a dropping of the intestines as the second testicle, the one in the abdominal cavity, was removed. It was a cystic testicle, with a large cord and it was necessary to puncture it before extracting from the abdomen. After the removal of the testicle the wound was packed and the animal taken, when over the anæsthesia, into a box stall. On dressing the wound the next day a piece of intestine was found in the scrotum. The wound was cleared of all the padding, thoroughly disinfected, the bowel pushed back in its place. The canal was repacked and the scrotum sutured. There was no further trouble.—(*Veterinary Record, March.*)

OVARO-HYSTERECTOMY IN A BITCH UNDER LOCAL ANÆSTHESIA [*W. H. Thomas, M. R. C. V. S.*].—A Samoyede four-year-old bitch had been in labor all the previous day, had passed with difficulty four dead pups of rather large size. She had several doses of ergot, with no results. On examination the presence of another pup was revealed; it was a breech presentation and efforts to remove it by vagina were ineffectual. Temperature 104° F.; bitch exhausted; ovaro-hysterectomy was decided upon, and as the animal was too weak to stand general anæsthesia, chloride of cocaine was resorted to. The operation was performed with all antiseptic cares possible. When the uterus was exposed, two large spots of gangrenous aspect were observed and demanded a great deal of care in bringing the organ outside of the abdomen. The amputation was made in the usual way, the animal showing only a little pain when the ligatures were applied above the ovaries. There was no trouble after the operation except a little discharge due to the injury of a small mass of mammary glandular tissue which had been touched during the operation. Recov-

ery was uninterrupted. The interest of the case is on the condition of the uterus at the time of the operation and the use of local anæsthesia in such a major operation.—(*Journal of Comparative Pathology, March.*)

HIGH PLANTAR NEUROTOMY [*J. F. Craig, M. A., M. R. C. V. S.*].—A review of the anatomy of the plantar nerves of the front and hind legs in relation to the proper place for the operation of neurotomy. It shows good illustrations of the dissection of the outside and inside of the metacarpal region, with also the measurement, in inches, of the termination of the plantar nerve and the origin and attachment of the oblique nerve, from the level of the button of the splint bone, as taken in thirty animals for the fore and as many for the hind leg. Conclusions: "For the fore leg, on the outside, the incision should be made $3\frac{3}{4}$ inch to 1 inch in length, vertically along the antero-lateral aspect of the flexor tendons, and the upper extremity of the incision should be on a level with the button of the splint bone. The length of the nerve corresponding with the length of the incision should be excised." "On the inner side, the operation may, with advantage, be performed higher up than the button of the splint bone, so as to more completely avoid the danger of opening into the great sesamoid sheath." "For the hind leg, to ensure the whole of the fibres in the external plantar nerve being cut through, the upper extremity of the incision should be made about $\frac{1}{4}$ inch below the level of the button of the splint bone at the antero-lateral aspect of the tendons. Thence the incision should be carried vertically downwards for a distance of about $1\frac{1}{4}$ inches. For the internal plantar nerve, the operation may be performed higher up, as in the fore leg."—(*Veterinary Journal, April.*)

CHRONIC METRITIS IN THE MARE [*Prof. W. L. Williams*].—A long and carefully written article in which the author gives a minute description of the symptoms of this trouble in mares. General depression, some emaciation and a discharge of pus from the vulva varying in aspect and in quantity. It may vary between a few pints to four and five gallons. Rectal and vaginal explorations are essential for a correct diagnosis. After a few words on the etiology and the pathogeny of the disease, the author insisting wisely upon the necessity of dilatation of the os, so as to allow direct therapeutic interference, dilatation which is sometimes very difficult to obtain, recommends the free use of disinfectants and principally the permanganate of potash in weak solution, or carbolic acid, tannin, glycerine and

water and sublimate solution. Iodoform introduced as powder and thrown on the uterine mucous membrane is also very good. Besides the local treatment, tonics and antiseptics are indicated. The Professor insists on the fact that the animal should be kept essentially under treatment carried out by a veterinarian and never be trusted to a layman. The article is completed by the detailed description of eight cases where a satisfactory result was obtained in a very short length of time.—(*Veterinary Journal, April.*)

MOUTH TUMOR IN A DOG [*R. Lewis Green, M. R. C. V. S.*].—Fox terrier had a tumor about the size of a sloe, involving the two central incisors of the lower jaw. He was placed under chloroform, the tumor removed, the bone scraped and the surrounding tissues cauterized. He did well at first, but after some six weeks the growth had returned larger. The dog was anæsthetized and operated. The two lower canines were the outside limits of the operation site and all intervening incisor teeth were extracted, the tissues from the mucous membrane to the bone being cut through and stripped off in a triangular direction, taking the canine teeth as the base. A section of bone was then excised with bone forceps, care being taken not to reach the posterior margin of the body, thus avoiding separation of the rami. The wound was well washed with warm solution of chinisol and plugged with boric acid. After ten days recovery was complete. So far the growth has not returned.—(*Veterinary Journal, April.*)

INFECTIVE SARCOMA OF THE VAGINA AND RENAL CALCULI IN A BITCH [*Prof. G. H. Wooldridge, F. R. C. V. S.*].—The record of an interesting case of a valuable bitch which after several parturitions presented peculiar symptoms towards her genital organs. A tumor was detected in the vagina, rough and apparently granulating on its surface. This was removed and on examination proved to be a large-celled sarcoma. The dog ultimately died, and on post-mortem a considerable number of calculi were found in each renal pelvis, in part mostly very small, but a large one was in each kidney, very irregular in outline and measuring in the greatest length about half an inch and quarter of an inch in the greatest breadth. There was also a small tumor of similar nature to that removed, inside the roof of the vulva, and about the size of a pea. No others could be found in any part of the body.—(*Veterinary Journal, April.*)

BE of service to your brother practitioner: Tell him what he misses by not reading the REVIEW.

FRENCH REVIEW.

By Prof. A. LIAUTARD, M. D., V. M.

A CASE OF TRUE DISLOCATION OF THE PATELLA [*Paul Haan*].—Ten-year-old horse was brought lame on three legs and moving by jumps only upon the sound leg. The extremity of the left side was carried much flexed towards the abdomen, and the toe, instead of resting on the ground, as in cases of pseudo-luxation of the patella, was raised from the ground some 50 centimetres. The stifle was evidently the seat of the trouble. It was painful to the touch, and presented a thick, big cord, very hard, and extending on the thigh towards the point of the rump. It was the posterior portion of the long vastus in the condition of physiological tetanus. The stifle was swollen, painful and deformed, with the patella completely dislocated outwards, held in position by the inferior tendon of the long vastus, which is inserted upon the external patellar ligament. On the inside of the joint there was a swelling, which seemed to indicate that there was a rupture of the small femoro-patellar ligament. There was no doubt as to the diagnosis—complete and outwards dislocation of the patella. The reduction was performed by pulling the leg slowly and progressively forward with a rope secured on the cannon and firm and steady pressure inwards applied upon the patella. After a few seconds a loud cracking noise was heard: the patella had returned to its place. A stiff blister around the stifle completed the treatment.—(*Revue Générale de Médecine Vétérinaire, February.*)

TUBERCULOSIS IN CATS [*P. Bergeon*].—Records of two cases, which add to the history of direct contamination through man. A common cat has been living with a janitor whose daughter had been suffering with tuberculosis for a long time and had died from it. The cat had often been seen swallowing the sputa of the sick girl. It was soon taken ill and died. At post-mortem the entire digestive apparatus was found diseased, the peritoneum, the liver, the intestines and in the thorax, the lungs and the pleura were also the seat of tuberculous lesions. Another cat belonged to a man whose daughter had tuberculosis, which killed her after sometime. The cat had always been with the sick girl, drinking the milk that she would leave after her meal and eating the pieces of meat that she had only chewed and spit out. The cat soon manifested disease and

died. The autopsy revealed tuberculous pleurisy with lesions in the lungs and also in the liver. It seems very evident that both animals had been infected by contact and living with these tuberculous people.—(*Revue Vétérinaire.*)

SLoughING OF THE HOOFF AFTER FIRING IN A NEUROTO-
MIZED HORSE [*M. Parent*].—Sloughing of the hoof in neuro-
tomized horses is accompanied with serious manifestations on
the podophyllous tissue. Nothing of this kind has occurred in
this case. The horse was eight years old and did cabbing work
for a month. As he had large exostoses on the fore fetlocks,
and, although he did not go lame, deep firing points were ap-
plied on both legs and a coat of ointment of biniodide of mer-
cury put over it. Ten days later, without any inflammatory
manifestations, the hoof of the right foot was found cast off in
the bedding. There was no trace of exudation or of suppura-
tion on the podophyllous or keraphyllous tissues. The only
cause that could be found was that the animal had sustained
median neurotomy, as he carried a linear cicatrix, at the point
of selection for that operation.—(*Revue Vétérinaire.*)

TRAUMATIC RECTAL FISTULÆ [*Mr. Esclause*].—This is
the record of two cases of injuries due to the use of the large
syringe so often employed in some large establishments. In
the first an animal suffering with influenza received in his treat-
ment rectal injections. The animal was doing well when,
without any cause, the temperature went up, and then appeared
three days after a slight hæmorrhage per rectum with scarcity
of fæcal matter. There was an injury of the rectum which,
notwithstanding treatment, proved fatal in a short time. In
the second case, the animal, treated for colic, showed after a
few days a swelling on the perineum. A lacerated wound of
the rectum was discovered and a counter-opening made at the
ischial arch to allow the discharge from a large ischio-rectal
pouch to escape. Notwithstanding most careful attention, the
cavity did not fill with granulations, and a free incision was de-
cided upon. To avoid possible and probable hæmorrhage, the
ecraseur was resorted to, taking in the chain all the tissues be-
tween the incision, the fistula and the rectum, involving the
sphincter ani with it. This free cutting exposed the entire
cavity of the purulent collection and transformed it into a large
open wound, which, treated antiseptically, was healed in a very
short time.—(*Bulletin Soc. Centrale, February.*)

TREATMENT OF STOMACHAL INDIGESTION OF SOLIPEDS
[*Prof. Cadéac*].—Curative treatment: First indication: over-

come the pain ; that is, quiet the colics. Most of the agents which are likely to do it have been given with another object, that of arresting the fermenting faculty of the microbes of the stomach. Ether, chloroform, chloral, opium, morphine, are the principal among those drugs. The antifermenting properties are not very important, their analgesic action, or, at least, quieting effects, are often very great : they prevent the rough and sudden struggles, the dangerous movements, the severe bruises to the stomach and its possible rupture. All these effects are important and cannot be ignored. Second indication : stimulate the secretions and the contractions of the stomach. These are obtained with pilocarpine, which stimulates the secretions and the contractions of the organ ; it softens the contents of the stomach and facilitates their expulsion ; eserine, which also increases the energy and the frequency of the gastrointestinal peristalsis ; its action must follow or be associated with that of pilocarpine ; it must never precede it. Veratrine increases the duration of the peristaltic contractions and assists the action of the pilocarpine. The third indication is to prevent or treat the troubles that may follow indigestion. Repletion of the stomach may be the starting point of complications towards the heart, the lungs or the rachidian bulb. Bleeding is a safety valve that may be resorted to. If mustard is not dangerous, it is often useless. Mixed refrigeration has been recommended and done good. Cold rectal injections are beneficial. Walking exercise is good, but animals must not be forced to walk, as all exaggerated motion is a cause of aggravation. Diluted chlorydric acid assists also. The introduction of the œsophageal probang in the stomach is of no advantage. —(*Journal of Zoötechnie, March.*)

SPONTANEOUS RUPTURE OF THE AORTIC TRUNK IN A STEER [*Mr. Piot-Bey*].—A working steer, aged 14 years, had always been in good health and worked to the last day, when he died suddenly. Post-mortem : Nothing in the abdomen ; all the organs are healthy. In the thorax : pericardium enormously distended with a clot of blood. This clot extends to the auricles alongside the aortic trunk as far as its bifurcation. In opening the aorta a solution of continuity is exposed, measuring about three centimetres and running in a slightly oblique direction downwards and backwards. The general aspect of the heart and that of the large arterial trunks, as well as the aorta, seem to be otherwise in perfect condition. There is no mark of atheromatous degeneration nor of aneurisms. This

case is probably the first one on record among large ruminants; in horses a few similar ones have been published.—(*Record de Médecine Vétérinaire, March.*)

ITALIAN REVIEW.

By Prof. A. LIAUTARD, M. D., V. M.

CLINICAL NOTES [*Dr. Angelo de Pascale*].—*Enchondroma of the Testicle in a Horse*.—At the age of three years this stallion was brought to the author to be castrated. On exploration the left testicle was found much larger than normal, very hard and bosselated on its outside. The operation was performed and the animal placed in a box stall. He died on the ninth day from causes not connected with the operation. The examination of the testicle made at the laboratory of the School of Pisa proved it to have undergone structural changes and was enchondromatous. *Actinomycosis on the Stump of a Spermatie Cord*.—A calf after castration presented on the left side a tumor as big as an egg, similar to its shape, and was constituted of compact tissue, in the centre of which was a purulent collection. Microscopic examination revealed the neoplasm to be an actinomycotic tumor. *Actinomycotic Abscess in the Mesentery of a Cow* [*Prof. Garibaldo Lisi*].—At the post-mortem of an old cow an abscess was found in the mesentery, forming a tumor as big as an apple and containing pus which was creamy and with some small granulations similar to the tufts of actinomycosis. The walls of the abscess were quite thick and had on the internal surface similar little granulations. Some of the pus was inoculated to three guinea-pigs. In examining the lesions of the dead and those from the cow the structure of actinomycosis was clearly made out.—(*Il Nuovo Ercolani, January.*)

SAND COLICS IN A MULE [*Dr. Guido Marietti*].—A six-year-old mule seems out of sorts, refuses all food, liquid or solid. Gastric indigestion is suspected. Purgatives are prescribed, but fail in their effects. Rectal examination reveals the intestine full, hard, and pulled downwards. Efforts to raise it by pressure upon the lower part of the abdomen give rise to great pain. Diagnosis changed to that of intestinal obstruction, possibly due to sand. An appropriate treatment was prescribed, but after five days the animal died with peritonitis of a very acute form. At the autopsy the abdomen was found to contain

much fluid; there were several hæmorrhagic spots throughout the length of the intestines, and in the portion situated between the sus-sternal and the pelvic curvature a large quantity of sand was found, making a mass weighing five kilograms.—(*Giornale della R. Soc. Veterinaria, January.*)

FISTULA AND NECROSIS OF RIBS DUE TO A FOREIGN BODY [*Dr. Domenico Bernardini, Adjunct*].—This is the very interesting record of a long and tedious case which was treated at the clinic of the Milan School. A horse of American breed (?) while in harness ran one night against a piece of iron drawn in a truck going in a different direction and which his driver had not seen on account of the darkness. The result was a deep wound on the right side of the chest near the point of the shoulder, from which a small quantity of blood was oozing. This wound, however, was very deep, and allowed the introduction of the arm in its whole length and yet the hand could not reach the bottom of it. It ran between the chest and the fore leg. In exploring it, the lacerated muscles were felt way back as far as the elbow and some still adherent to the ribs. It being night, and the hæmorrhage not alarming, the wound was dressed antiseptically and well packed for the time. The next day the animal was thrown and an incision was made 20 centimetres from the elbow alongside the vertical direction of the thorax, the lacerated tissues were removed, and all the loose fragments of fractured ribs taken off. There remained a wound measuring 80 centimetres, which, after being made smooth, was minutely disinfected and closed. Recovery went on with no great trouble, and in 21 days the animal was discharged comparatively well. There was, however, a small fistulous tract, which was not healed five months after, notwithstanding many forms of treatment, and the horse was again brought to the author. The animal was cast again, the old cicatrix cut down, the fistulous tract followed to its end, the new wound well and thoroughly cleaned and allowed to close by second intention. After a month all cicatrization was complete and the fistula apparently definitely closed. But after a few weeks it broke out again, and it was only then that by probing the sensation of the presence of a foreign body was obtained. The fistula was again freely opened, and at last, implanted into the anterior border of the seventh rib, a sharp piece of iron, broken off from the one that had caused the original wound, was extracted. Finally the case did well and was cured.—(*Clinica Veterinaria, January.*)

COMMUNUTED FRACTURE OF THE WING OF THE ATLAS [*Dr. Pierre Fossati*].—A mare, to be made stand still, receives from the hostler a blow with a stool on the top of the neck, and, as a consequence, presents on the left side, over the transverse process of the atlas, a bruised wound with a swelling extending along the parotid and over the masseter region. The bruise was treated for two days with tepid antiseptic fomentations and bandage. When this was taken off on the third day, there was a discharge of red color, mixed with pus. Digital exploration revealed the condition of fracture of the wing of the bone. An incision was made over the swelling, and a number of small pieces of bone removed. The wound cicatrized with very abundant suppuration. The animal, however, never showed any great trouble about her injury, and ate well all the time. The dressing of the wound was made with naphthaline and later with salicylic acid.—(*Clinica Veterinaria*, February.)

COLORADO HORSES' EYES.—Dr. Mark White, of Denver, Col., writes: "I find that the native Colorado horse is practically free from diseases of the eye, and I have not met with a single case of periodic ophthalmia in a Colorado-born animal since I came here. The only disease of the eye that is common here is an excessive deposit of the nigra pigment bodies, due to the intense sunlight, which stimulates the secretion of this material. In some instances it is so pronounced as to partially or wholly occlude the pupil, causing horses to shy badly. I believe that fully 75 per cent. of the horses are thus affected, and there is no effective treatment for it. Keeping the patient in a darkened stall will cause absorption of some of the pigment."

E. E. SMATHERS, who was sued by the Memphis Trotting Association to recover the Gold Cup won by "Major Delmar" in 1904, from the trotting queen "Lou Dillon," the latter owned by C. K. G. Billings, who charged the Smathers party with having caused the mare to be drugged to destroy her chances of winning, has issued a challenge with the famous cup as the stake. The event, according to Mr. Smathers, will be for mules, and will consist of but a single heat. The driver of the winner will be given permanent possession of the valuable trophy, and the offer will remain open until accepted. There is but one stipulation, and that is that "all members of the Caucasian race are ineligible to drive their mules or mules owned by others, with the exception of C. K. G. Billings."

ARMY VETERINARY DEPARTMENT.

DOES MALLEIN CURE GLANDERS?

By FRED B. GAGE, M. D. V., Veterinarian Artillery Corps, U. S. Army,
Fort Myer, Virginia.

While making a complete test of two hundred and forty animals of the 3d Battalion Field Artillery upon its return from Chickamauga Park in the fall of 1906, glanders having occurred among some of the animals while in camp, I found one animal that reacted to the mallein test.

This animal had recently arrived from the West, was $4\frac{1}{2}$ years old, condition good, with no signs of any disease. He did not accompany the command to Chickamauga Park as he was considered too young to stand the journey. Oct. 5th, 1 cc. of Government mallein was injected, the maximum temperature before the injection was 100° F. This resulted in a typical reaction. The maximum temperature reached on the following day was $106\frac{1}{5}$, with a large circumscribed tumor measuring about 8 inches in diameter and the animal showed all the characteristic symptoms.

The animal was at once isolated in a stable about one-eighth mile from the Battery stable and held as a suspicious case of glanders.

On Oct. 18, a sample of blood was sent to the Bureau of Animal Industry and the agglutination test made of the same, which gave a reaction of 1-800; this indicates that this animal was suffering from incipient glanders.

Nov. 8 the mallein was again injected, the maximum temperature before the injection being 101 and the maximum temperature reached after injection being $104\frac{1}{2}$, with the characteristic swelling at site of injection, decided illness, etc., and was considered a typical reaction.

A sample of blood sent to the Bureau of Animal Industry Nov. 10, gave a reaction to the agglutination test 1-500. As the animal still showed no symptoms of glanders and was in such good condition it was decided to keep him and apply the mallein test every four or five weeks to see if it really possessed any of the curative properties claimed for it.

Dec. 11, the mallein again injected with the maximum temperature before injection $99\frac{1}{2}$. The maximum temperature reached after injection was 104. The tumor at the site of in-

jection was not as large and painful as it had been on the previous test and entirely disappeared in about three days, still it was considered a reaction.

Jan. 8, a sample of the blood was again sent to the Bureau of Animal Industry and the report was made that "the sedimentation was very imperfect and could in no sense be considered a positive reaction."

Jan. 23, mallein again injected with a maximum temperature of 100 before injection. Maximum temperature reached after injection 101°, with no swelling at site of injection, and no other symptoms, so that it was considered "no reaction."

Feb. 25, mallein again applied, no reaction.

April 16, mallein again applied, maximum temperature at time of injection 100, maximum temperature after injection 102, but no swelling at site of injection. This was not considered a reaction.

During this whole period this animal had showed no symptoms of this disease. About one month after being isolated a peculiar lameness developed in one hind limb that resembled rheumatism, and as this condition grew worse I recommended that he be destroyed to prevent further suffering.

April 18 this animal was destroyed and a post-mortem examination performed by Dr. John R. Mohler, Chief of the Pathological Laboratory, Bureau of Animal Industry, and myself. The autopsy revealed pulmonary glanders, the lungs being studded with nodules from the size of a pea to a hazel nut. These nodules were in all stages of development, some being of long standing and some recent. They were not encysted or encapsulated, and were in a condition to suppurate and break down, and, communicating with a bronchus, be carried the whole length of the respiratory tract, and finally locate in the nostrils, and there pour out their discharge so deadly to the spread of this disease. The other organs were normal, even the sub-maxillary glands. As it was a question whether the contents of these nodules were virulent and capable of transmitting the disease, a section of the lungs containing many nodules was taken by Dr. Mohler to the Bureau of Animal Industry to determine the presence or absence of the glanders bacillus by injecting the contents of a nodule into guinea-pigs.

The guinea-pigs being chloroformed four days after injection, the animals showed the characteristic lesions on post-mortem. His report on the same follows:

APRIL 22, 1907.

Dr. Frederick Gage, Fort Myer, Va.

SIR: Referring to the specimens from the lungs of a horse destroyed at Fort Myer, Va., on the 18th inst., you are advised that the inoculation experiments conducted with guinea-pigs confirmed the diagnosis of glanders. In the three guinea-pigs, each injected with an emulsion of a nodule in different stages of development, a severe orchitis developed, and when chloroformed this morning they all showed an ulceration of the tunica vaginalis, and numerous punctiform areas of necrosis in the spleen, with several circumscribed hæmorrhagic infarcts.

Cover glasses prepared from the necrotic tissue of the testicle showed the *Bacillus malleus* in large numbers. Very respectfully,

(Signed)

J. R. MOHLER,
Chief, Pathological Division.

In my opinion this proves that mallein cannot be relied upon as a curative agent for glanders. Had this animal not developed a lameness which was incurable and caused suffering he would have been returned to the original stable and to duty and recorded as a cured case of glanders. Sooner or later this animal would have been the means of spreading this disease. In this case, although an incipient one, and given the best of food and care, mallein failed to encyst or encapsulate the nodules and render them harmless, as it has been claimed by some to do, and I firmly believe that sooner or later these cases that are pronounced cured will be the cause of spreading the disease; and that if a test was made by killing one of these, that the nodules would be found to exist, not encysted, but ready to suppurate and break down at any time, and that the contents of these nodules are virulent and can be proven so by injecting the same into the guinea-pig.

It is to be regretted that the animal treated at the Presideo of Monterey by Dr. Corcoran, of the Artillery Corps, that showed clinical symptoms of this disease, and was pronounced cured, as reported in a recent number of the AMERICAN VETERINARY REVIEW, could not have been destroyed and a careful examination of the same made. In my opinion, although it would cause a loss to the Government of one animal, I feel that it would be the only safe way to prove that this animal is really cured.

Dr. J. G. Rutherford, Veterinary Director-General of Canada, at the annual meeting of the American Veterinary Medical Association, held at New Haven, last summer, read an interesting paper on this subject. He claims that they have spent \$500,000 eradicating this disease from Canada. He reports

that these so-called cured cases, or "ceased reactors," as he calls them, are the most dangerous of any, and are the source of spreading a great deal of this disease.

Col. F. Smith, of the Veterinary Department of the British Army, in his able work on "Veterinary Hygiene," speaks of mallein as follows: "Mallein is a simple chemical agent in skilled hands, but a very dangerous substance in the unskilled—dangerous not because it threatens life, but because its effects may be wrongly interpreted and lead to disaster. The questions of judgment and experience are inseparable from mallein operations." Again he speaks of it as follows: "By repeated injections of mallein, a tolerance is established and finally no reaction obtained in an animal which has previously given an undoubted glanders reaction. This failure to react may either mean that the case is cured or that a tolerance is obtained, though the disease is still active in the lung."

On the morning of April 14th an acute case of glanders was discovered in the 4th Battery, Field Artillery. This animal, one of those tested last October and gave no reaction, had a temperature of 103°, swollen sub-maxillary glands, and discharge from the nostrils. He was at once isolated and the mallein test applied, which failed to give any reaction. This does not reflect on mallein as a diagnostic agent, as it very often fails to react in acute or old-standing cases where the system is overloaded with the bacilli, but shows that too much dependence must not be put upon mallein as a diagnostic test when other symptoms are well marked.

The above animal was condemned and destroyed. The physical examination and post-mortem confirmed the diagnosis, the nasal septum in both nostrils being overrun with ulcers.

It would appear that if all animals in the Army are subjected to the mallein test every three months, that a certain tolerance to this agent is possible to be obtained that is going to be very dangerous, as it makes the mallein test very uncertain and unsatisfactory in a suspicious case of glanders that may appear at any time, and that this subject is worthy of more careful study. Certainly from my experience with mallein, the curative as well as the immunizing properties of the agent are yet to be proven.

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MALLEIN NOTES.

The mallein treatment was applied to 219 artillery horses at Fort Snelling, Minn., on March 18. One typical reaction was

obtained, with no clinical symptoms. This is a good record for Minnesota.

At posts where no veterinarian is assigned, civilian veterinarians were recently invited to submit bids for administering mallein to the horses four times a year. It is passing strange that, while the profession as a whole has virtually discarded the idea of employing mallein as a curative agent, the Army should adopt it. The case report by Dr. Gage, of Fort Myer, Va., in this number of the REVIEW, is a sufficient commentary upon its value.

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ARMY PERSONALS.

Dr. Alex Plummer, of Fort Riley, Kansas, has made several professional trips to St. Louis to select horses for Army service. Dr. Plummer is testing the value of antistreptococcic serum by administering immunizing doses just before shipment, and so far the effects are apparently most favorable.

THE statement is made by good Colorado authority, that the empirics of that state spent about \$700 in an attempt to repeal the Colorado veterinary law, but the profession defeated their bill.

IMPORTANT STALLION LAW IN MINNESOTA.—Minnesota veterinarians secured from the last legislature a law providing for registration, verification of pedigrees and veterinary examination of all stallions standing for public service in the state. It is estimated that this, in addition to being a very important movement for the horse breeding interests of the state, will bring in for the veterinarians about \$10,000 or \$12,000 the first year. This law provides that all stallions shall be submitted to examination by a duly licensed and qualified veterinarian; this to be repeated every four years until the horse is ten years of age. Horses are barred for infectious or hereditary disease or unsoundness, the following diseases being especially listed: cataract, amaurosis, laryngeal hemiplegia, chorea in various forms, bone spavin, ringbone, sidebone, glanders, farcy, *maladie du coit*, urethral gleet, mange, melanosis, and curb or curby hock. The management of this work rests in a stallion registration board, in which the profession is recognized. It consists of three members, viz.: the President of the Horse Breeders Association, Professor of Animal Husbandry in the College of Agriculture and the Veterinarian of the University Experiment Station.

SURGICAL ITEMS.

BY DRs. L. A. AND EDWARD MERILLAT, CHICAGO, ILL.

DISLOCATIONS OF THE PATELLA IN THE HORSE.

Dislocations of the patella in the horse occur in three distinct forms, each one differing from the other in every respect except in the direction of the displacement, which is always outward.

The *first* and the most common form is the so-called *pseudo-luxation* or *stifle cramp*, that is manifested by trailing the foot along the floor and by total inability to flex any of the articulations of the affected leg. In olden times and even to-day this disorder of locomotion has been regarded and treated as a real luxation, and any attempt to contradict this well-grounded impression has been generally met with stiff counter-arguments until the delusion was banished by a more common-sense view of the condition. Only recently, a plain statement of the facts connected with this common abnormality almost precipitated a panic in one of the first veterinary associations in this country. Old practitioners revolted against any attempt to discountenance their old interpretation of the disease. They were manifestly slow to give up a theory or, better still, a delusion which has permitted them to cure disarticulated diarthroses with the crack of a whip, and that, too, without leaving behind any of the inevitable sequelæ of luxations. Try to-day to convince old practitioners that traumatic dislocations of the patella are rather rare in horses, and note what a beautiful debate will follow.

The stifle cramp scarcely deserves the name of luxation even with the "pseudo" qualification, because it is more of a muscular than an articular defect. The patella is barely displaced, its binding apparatus is uninjured, and the surrounding synovials sustain no harm. The compound word "pseudo-luxation" may, however, be retained, because the patella is somewhat dislodged from its normal position; but the phrase "stifle cramp" is much more lucid, because it selects the real state of affairs, and above all dispels the delusion anent the dislocation. Hughes, for years, has insisted upon calling it "fixation of the patella"—an appellation which in our opinion is highly appropriate, if the word "patella" is insisted upon in the nomen-

clature. With laymen a horse so affected is "stifled" or "his stifle is out," and to them the latter phrase seems specially appropriate after they have seen the self-deceived veterinarian dexterously snap the supposed luxation into place.

The *cause*, although sometimes obscure, is generally traceable to some slight change in the patient's usual habits. Usually it is a change that causes the animal to remain standing longer than usual. A hard-worked horse, carrying more than an ordinary amount of flesh, previously accustomed to a wide stall or loose box, that remains standing all night (or continually for days) instead of resting, as usual, may be found with a stifle cramp in the morning. A too narrow stall, a strange environment, a wretched litter, or some trivial inherent discomfort, are so many conditions which may prevent a work horse from taking its much needed rest in decumbency. The pregnant mare confined in a single stall is often a victim. Perhaps the continued strain to the large muscles of the thigh, from holding the weight of the body in the standing posture all night, has ended in a cramp that manifests itself by the symptoms of this peculiar disease. Whatever may be the actual cause, or whatever may be the manner by which this suspected cause produces the cramp, it is nevertheless true that the patient, when found in the morning, usually shows no evidence of having laid down during the night. The litter is not disturbed, and there is no manure stain on the hocks to indicate that the patient had been recumbent. The disease never occurs from a sudden injury while at work; it never supervenes a restful night in the recumbent position; it is never seen in a horse immediately after rising; and, finally, it is never seen in weak, lean, or emaciated horses. The susceptible subject is the horse in good general health, in fair although not necessarily excessive flesh, and previously accustomed to regular exercise.

The *symptoms* are well known to all experienced practitioners. When an attempt is made to back the horse from the stall it is found to be mysteriously disabled, often refusing to budge an inch in the backward direction. When forced to take one backward step one foot seems fixed to the floor, and when pushed backward by sheer force the foot of the affected leg trails the litter out of the stall. The leg is rigid; not a joint flexes. If moved forward, the leg, still rigid, drags along behind the other with the toe on the floor. Sometimes these movements suddenly relieve the symptoms and the horse walks a few steps apparently well, but only to be seized with another cramp

after a few moments' repose. Usually, however, the condition is more tenacious, and will not yield to these ordinary attempts to walk, and if not relieved will persist from four to thirty-six hours and then disappear spontaneously. In some instances, after the cramp is relieved by manual manipulations of the leg or by the crack of a whip over the buttocks, it will recur in a few moments; even as the patient is walking the leg may be suddenly seized with a cramp that locks its joints as completely as before. But after the cramp that has dominated for several hours has been relieved once or twice by the whip, it becomes less obstinate; that is to say, the recurrent seizures are much more easy to relieve than the original one. They may come and go a number of times, each one more feeble than the preceding, and then under the influence of exercise, disappear entirely. Manipulations of the stifle, especially a number of good firm thrusts of both hands against the patella, will produce a snapping thud followed by complete relaxation of the rigid leg and immediate reestablishment of normal locomotion—a transformation as complete as it is amazing to the astonished bystander. To the snapping sound, perceived as the rigidity of the leg vanishes, may be attributed the well-established impression that the patella had been dislodged, and that the marvelous cure depended upon its reposition.

The pathology of this remarkable phenomenon is as obscure as that of cramps in general, and even if every one admitted that the disease is but a muscular cramp, there would still be much to explain as to the exact cause, the exact initial lesion, if any exists, the exact location of the contracture, and the exact manner by which the latter so effectually locks the articulations. Williams' experiment of bolting the patella to the femur shows that fixation of the patella alone is not followed by the symptoms manifested in so-called stifle cramp or pseudo-luxation of the patella, and the case reported by Dr. Paul Haan and our own cases described below, all of which were real outward dislocations of the patella, show that actual luxations present an entirely different clinical picture than that of trailing the leg from inability to flex the joints.

Although the theory of luxation is not seriously entertained by any one who has given the matter an intelligent thought, there are few observers who would deny that the relations of the three bones comprising the stifle are not disturbed. The femero-tibial angle is increased and the patella is fixed against the external lip of the trochlea. The former evidence is plainly

observed on inspection of the region, and the latter (the displaced patella) is confirmed by the thud and its unmistakable inward movement that is perceived as the rigidity of the leg vanishes from manipulations or from a sudden start. By exclusion, and by the transitory character of the condition, these phenomena may reasonably be attributed to cramp located in the muscles attached to or closely related to the patella. That the cramp is reflected largely upon the patella is shown in its instantaneous cessation when the patella is successfully snapped inward by pressure from without, or by a sudden movement.

It would be interesting, of course, to isolate one muscle to the exclusion of all others as the seat of the contracture, but the most reasonable hypothesis is, that whole groups are implicated instead of a single muscle. The complex muscular system that enables a horse to support the hindquarters in spite of the series of angles in which the bony column is arranged and which as a whole is more or less closely related to the patella, is undoubtedly the seat of the disorder. If, by a seizure of tonic spasm, the muscles occupying the space behind the femero-tibial angle, fix the stifle joint, the hock will also become automatically fixed, because these two joints can only flex simultaneously. The same contracture will also more or less effectually fix the hip and thus complete the rigidity of the whole leg, which, in fact, is the real state of affairs that exists in the so-called pseudo luxation of the patella. Instead of being a mere fixation or displacement of a single bone, it is in reality a locking up of the whole leg. *The slight dislodgment of the patella from its position in the depths of the trochlea is but an incident of the rigid leg, and not a cause*, for when the patella is actually wrenched from its normal position by force and deposited outside of the external lip of the trochlea, the leg presents an entirely different physiognomy; all of the articulations are flexed instead of extended.

In a word, pseudo-luxation of the patella is a *tonic spasm* of one or more muscles that locks the stifle, hock and hip, and which is so reflected upon the patella as to instantaneously relax when this bone is manipulated.

Treatment.—The certain method of effectually coping with the stifle cramp is to draw the leg slightly forward, lift the foot from the floor as if trying to flex the hock, and then execute a number of forcible thrusts against the patella with the other hand until a snapping thud is perceived. At that moment the locked articulations relax and normal locomotion at once

returns; the horse will be noticed to walk as if nothing had happened. Generally, the cramp will return in a few moments, unless a vigorous exercise is immediately insisted upon. A good brisk trot of two to three hundred yards is often sufficient to prevent a recurrence, but if the seizures still return, a thorough warming up will be necessary. When exercise for any reason is impossible, a brisk rubbing of the stifle and belly with oil of turpentine sufficient to cause the animal to fight the irritation produced will answer the purpose.

The "whip method," which consists of giving the affected animal a good sharp rap over the buttocks is, however, quite as effectual, especially in a spirited animal that will respond sharply to such manœuvres. In this method the patient should be taken into the open to facilitate free movement. The attendant holds the lead strap a safe distance in front of the animal, which is then submitted to an unexpected lash with the whip. The sudden start is usually accompanied with an audible thud as the leg relaxes and locomotion returns. But when this fails completely, despite repeated attempts, recourse is had to the former method, which seldom ever fails. In bilateral cases, it sometimes happens that the cramp recurs in one leg while attempts are being made to relieve the other. In this event, the situation is, for a time, rather discouraging, but if both legs are successively relieved a number of times, the intervals between the seizures will increase in length sufficiently to finally bring both into a normal state at the same time, and hence render locomotion possible. No time must then be lost in giving the patient a good lively trot of no less than half an hour.

Blistering the stifle with cantharides, complicated surgical operations (desmotomy of the patellar ligaments), tying of the foot of the affected leg forward by means of ropes, and the application of the old-fashioned stifle shoe, are all unnecessary expedients. These radical measures have emanated from the prevailing misconception of the harmlessness of the condition.

Finally, stifle cramp, no matter how rigid or how obstinate, will relax spontaneously. Generally, it will dominate for twelve hours, but sometimes thirty-six hours may elapse before the relief comes. There are isolated cases reported here and there in which the cramp continued longer, but these are exceptional. Treatment by manipulating the leg or by the crack of the whip is, however, preferable to that of waiting for the spontaneous relief. There is some credit always given to the performer of

this seemingly marvellous, bloodless operation, and the patient is saved some hours of discomfort if not of pain.

THE SECOND FORM.

A second form of luxation of the patella in solipeds is seen in colts. This one is of congenital origin, and is due to a *pronounced relaxation* of the apparatus that holds the patella in its proper position in the trochlea of the femur, and which in turn is undoubtedly due to mal-nutrition of maternal origin. Very often, as the affected subject develops under improved hygiene, the condition gradually improves, leaving no trace of its previous existence. But in some instances the subject grows to maturity with the defect still persisting and perpetuating a state of miserable decrepitude. The patella, in constantly slipping over the external lip of the trochlea, wears it flat, entirely destroying its physiognomy. Richards reports a case of a three-year-old, in which both the external and the internal lips were worn level with the shaft of the femur, by the constant flopping of the patella over them from the time of birth.

This disease, which is but a local manifestation of general systemic weakness, may be mistaken for stifle cramp, as colts, too, are susceptible to the latter. The differentiation is made by its constant recurrence, which is not the tendency of the stifle cramp.

It occurs in various degrees. The relaxation may be so complete as to allow the rickety patella to slip easily over the entire trochlea, or it may in other cases only allow it to slip over the smaller lip—the external one. In the latter event the stifle locks quite as completely as in stifle cramp of mature horses, and the symptoms of locomotion are not dissimilar. The local symptoms are, however, easily recognized from those of stifle cramp, as the patella of this emaciated subject is plainly felt, and can, with more or less facility, be picked up with the hand and replaced in the trochlea.

The *treatment* consists of good sanitation, a balanced ration of nourishing feeds for the mother and the young, invigorating out-of-door exercise for both, and the application of mild stimulating liniments and massage to the affected stifles. It is also important to replace the dislodged bone as often as possible, in hopes that eventually it will be retained. When these fail, *desmotomy of the internal straight ligament of the patella* will materially help matters. But this operation is only effectual when the relaxation is not too pronounced. If the patella slips over the whole trochlea, internal lip and all, no benefit will be

derived; but, on the other hand, if the patella only locks over the external lip, the division of the ligament will permanently prevent the locking, and thus facilitate locomotion, while the colts improve toward perfect recovery under the hygienic treatment above recommended. *This operation has evidently been grossly misjudged as regards its intent for habitual luxations of the young, as well as having been misapplied to diseases for which it was never intended.*

We have had occasion to make use of the operation three times, each time to good advantage. Shumacher, formerly of Milwaukee, also performed the operation three times with successful results. These subjects, six in all, were not suffering from the transient stifle cramp of the "whip" variety, but were habitually affected with a marked relaxation of the ligamentous apparatus of the patella, that allowed the bone to glide over the external lip. When replaced into the trochlea, the subject walked well enough, but sooner or later the bone gradually found its way out again, and the same inability to flex the stifle immediately supervened. Unfortunately, the data on these interesting cases has never been accurately tabulated, and can only be reported in a general way.

THE THIRD FORM.

The third form is the true, traumatic luxation of the patella, with all of the complications that accompany the tearing asunder of normal diarthroses. These cases, although exceptionally rare, do occur, and that with sufficient frequency to command attention. The real luxation of the patella in mature solipeds differs so materially from the above-mentioned varieties in regard to their symptomatology and especially their terminations, as to set to route for all time the popular fallacy that the stifle cramp is a true luxation in the surgical sense of the term.

When the patella of a normal stifle is accidentally wrenched from its normal position and deposited over the external lip of the trochlea, an entirely different chain of symptoms is presented than in stifle cramp, and furthermore the results are disastrous; it does not terminate in the instantaneous cure, but on the contrary leaves an acute lameness that becomes chronic, incurable, deforming. The subject, although not susceptible to recurrence of the accident, henceforth suffers from a chronic gonitis of no small magnitude.

The *symptoms* of this form are remarkable, in the face of what is ordinarily expected from observations on the pseudo-

luxations and the habitual congenital luxations. The diagnostician expects to see the foot "nailed" to the floor and all of the articulations locked in extension, and with the rigid leg trailing behind while walking, but instead he finds all of the joints flexed, the stifle hugging the abdomen, and most remarkable of all, the foot is held up as high as the level of the hock, and can not by any kind of traction be made to descend an iota lower.

We have encountered two such cases in work horses during the past eighteen years, and Haan, in the *Revue Générale de Médecine Vétérinaire*, Feb. 15th, reports a case in a cavalry horse.

Our first case occurred to a farm mare working on the Pullman Farm, Riverdale, Ill., during the summer of 1898. The mare, an exceptionally fine specimen of the grey Normans, although perfectly well when left for the night, was found totally disabled in the morning. The farm hands could not back her from the stall nor induce her to place the foot of the affected leg to the floor. It was my privilege to examine her a few hours later. A first glance on approaching her from behind gave the impression that she was suffering from some acute pain in the lower articulations or synovials—a fracture of the os pedis, a nail prick, or a puncture into the sesamoids perhaps. But a second more careful review of the attitude showed that the peculiar position of the leg was a strikingly unusual one. The foot, which remained stationary, never moving up or down as is always the case when it is lifted from severe pain, occupied a position opposite the hock of the sound leg. Its wall almost touched the internal surface of the opposite hock, and there it remained, moving neither laterally nor vertically.

Knowing now that the case was an unusual one, the mare was backed from the stall by sheer force of several men and whipped out into the open, where she could be submitted to a careful examination.

Viewed laterally, the stifle was seen to hug the flank, and to be flexed into the acutest angle possible, and the hock was flexed so as to bring the foot into the position already mentioned. On palpation, the external face of the stifle was found markedly tumefied and slightly painful to the touch. Within the swelling a rounded, hard object the size of a cocoanut could easily be felt. This was the dislodged patella. There could be no mistake. I was confronted with a true luxation of the patella, but was very reluctant to announce my decision, because

the symptoms presented were directly opposite to my previous conception of what they should have been. I had been taught that dislocation of the patella is always manifested by fixed, rigid and extended articulations, and with the foot "nailed" to the floor; and here was an unmistakable case presenting flexed articulations, with the foot elevated as high as the hock.

By way of effecting a reposition of the luxation, the mare was placed beside a wall to prevent her from moving too freely about, while the manipulations decided upon were carried out. A rope was looped around the pastern, and with the assistance of four strong men an attempt was made to straighten out the leg by forward traction, but this proved futile. Despite their combined strength, it was found impossible to bring the bony column out of its obstinate state of flexion by such traction. The foot could be pulled forward and upward until it touched the abdomen at the level of the ensiform cartilage, but it could not be drawn downward and forward far enough to extend the stifle sufficiently to allow the patella to surmount the external lip of the trochlea over which it was so firmly locked. After a number of unsuccessful attempts, which had shaken the confidence of my audience and even caused me to doubt the correctness of my diagnosis, an attempt was made to draw the leg backwards as far as possible. This effort caused intense pain, which was resented by a violent attempt to break away from her tormentors. In this "mix up" a veritable tug-of-war ensued; the assistants on the rope tugged frantically, as if to prevent the frenzied patient from running away, and in so doing accidentally *pulled the leg violently at a right angle from the body* as she wheeled around. At this moment a loud thud was plainly heard by everyone present. Some ventured that a cure had been effected, others thought the leg had been broken, whilst I, completely bewildered, remained non-committal until, a moment later, when our patient, trailing the rope still attached to the affected leg, walked almost sound, and unattended into the stable. The patella had snapped into the trochlea.

The mare never suffered a recurrence of the trouble, but remained lame and disabled for months, and was finally sold for breeding purposes. The stifle became the seat of a hard tumefaction, and the muscles of the thigh and hip atrophied, leaving this excellent mare a very poor excuse of her former self.

The second case was encountered during the winter of 1901. A horse working in a sewing machine wagon was found in the

morning, without apparent cause, with one foot lifted from the floor and the patella standing out prominently on the side of the trochlea. Profiting by the experience above related, the reposition was a matter of but a few moments. The leg, with the aid of a rope, was pulled firmly away from the body laterally by two strong men, and at the same time the patella was submitted to several good firm thrusts with the palms of both hands, until it snapped into position. Some weeks later this subject was sold as a cripple.

A third case is reported by M. Paul Haan, in the *Revue Générale de Médecine Vétérinaire* (Vol. IX., No. 100). This one, like the preceding ones, is a work horse, found upon examination to be totally disabled in one hind leg, all of the joints of which are flexed and the foot is carried rigidly some distance from the floor. The patella, thrown completely out of the trochlea externally, can be plainly felt on palpation. The region is painful and slightly cedematous. Reposition is effected by backward traction, but with some difficulty, and the patient remains lame for some weeks before returning to work.

SUMMARY.

1. True luxations of the patella of traumatic origin are rare, and when they do occur they are manifested by flexion of the articulations and inability to touch the floor with the foot of the affected leg.
2. True luxations of the patella of congenital origin are common in colts and other young animals, but these are due to flaccidity of the apparatus holding the patella to the trochlea.
3. Pseudo-luxations of the patella are in reality not luxations at all, but a spasm which, by locking the stifle automatically, locks the hock and hip in extension.
4. Pseudo-luxations exist in colts, and must not be mistaken for true congenital luxations.
5. Desmotomy of the internal patellar ligament is an effectual operation in the treatment of habitual luxations of congenital origin.

It costs \$7.40 per head per annum to feed the animals in New York Zoölogical Park.

THE Department of Animal Pathology of the Nebraska Experiment Station received an appropriation from the last Legislature of \$1000 for investigating tuberculosis in hogs, and \$1500 for investigating malarial fever in horses.

COLLEGE COMMENCEMENTS.

CHICAGO VETERINARY COLLEGE.

The twenty-third annual commencement exercises of this school were held in the College Auditorium on Friday afternoon, March 29th, at two o'clock. The large and commodious hall was filled to its utmost capacity, notwithstanding that many, owing to the early hour in the afternoon at which the exercises were held, were prevented by business engagements and otherwise from being present. The room was very handsomely decorated with flags, bunting, college emblems, pictures and flowers. The members of the Faculty occupying seats on the rostrum were: Drs. Joseph Hughes, A. H. Baker, E. L. Quitman, J. F. Ryan, E. L. Day, A. S. Alexander, L. A. Merrillat, E. Merrillatt, Jas. M. Wright, Jas. Robertson, Maxmilian Herzog, C. A. White, R. H. Phillips, P. H. O'Donnell. Dr. J. G. Rutherford, Veterinary Inspector-General of the Dominion of Canada, also occupied a seat on the rostrum. The proceedings, as is customary, were opened with an address by the President, Dr. Joseph Hughes, who detailed the history of the institution and its progress since its inception, and in a few well-chosen remarks complimented the graduating class on its attention and ability during the session just closed, which was one of the largest in the history of the school—344 having matriculated. He also paid a well-deserved compliment to the Faculty for their ability and teaching qualities, which had in no small measure contributed to the success of the present class. The roll-call of the graduating class, which is given below, as well as that of the honor class, next followed, after which the Dean of the Faculty, Dr. A. H. Baker, conferred on its members the degree of Doctor of Comparative Medicine (M. D. C.), and presented each with the diploma of the school.

Dr. Maxmilian Herzog, Professor of General Pathology and Bacteriology, distributed the medals and prizes. The doctor was exceedingly happy and felicitous in his remarks while engaged in the performance of his task.

The following received prizes:

Gold medal for highest general average, Dr. W. H. Dreher; gold medal for the best final examination in theory and practice, Dr. Wendell Smith; gold medal for the best final examination in anatomy, Dr. Wendell Smith; gold medal for the

best final examination in surgery, Dr. H. J. Schwartz; gold medal for the best final examination in cattle pathology, Dr. C. D. Williams; prize in dentistry, Dr. J. R. Shand; prizes in pathology and bacteriology respectively, Drs. W. H. Dreher and E. J. Watters; prize in materia medica, Dr. H. J. Schwartz; prize in parasitology, Dr. W. G. Kupper; prize in lameness and shoeing, Dr. Wendell Smith; prize in canine pathology; prize in physiology, Dr. A. B. Rogers; prize in chemistry, Dr. Otto C. Faulbaum; prize in meat and milk inspection, Dr. F. E. Williams.

The presentation of the class picture was made by Dr. John E. Klem, and its acceptance responded to on behalf of the Faculty by Dr. E. L. Quitman.

Interspersed with the musical program were addresses made by Dr. James M. Wright, State Veterinarian; Dr. L. A. Merilat and Dr. J. G. Rutherford.

Dr. Leo T. Donovan delivered the valedictory, and Dr. B. H. Edgington the class prophecy.

Dr. A. H. Baker brought the proceedings to a close by delivering the Doctorate.

The following is a list of the graduates and honor class:

Stanley W. Allen, Willow Lake, S. D.; F. W. B. Achen, Russell, Ill.; C. W. Anderson, Jewell Jct., Ia.; Thos. E. Anderson, Lenox, Ia.

John P. Beck, Cavetown, Md.; Forrest C. Bowman, Maquoketa, Ia.; Robert A. Buchmann, St. Louis, Mo.; Chester P. Branigan, Glen Ellyn, Ill.; Roscoe C. Byrnes, Maltott, Ia.; John B. Byrnes, Baltimore, Md.; John H. Bakelaar, Passaic, N. J.; Lawrence C. Beaumont, Ames, Ia.; W. Leo Brailey, Amherst, O.; Frank T. Burnett, New York City, N. Y.

D. L. Cowgill, Columbus, Wis.; J. O. R. Campbell, Geneva, Ind.; John J. Cranwell, Waterbury, Conn.; G. Neal Chambers, David City, Neb.

Floyd N. Davidson, Summit City, Mich.; Oliver Perry Dickson, Indianola, Ill.; Augustin R. Dickel, Keyser, W. Va.; Rufus D. Denton, Carthage, Ill.; Wm. Henry Dreher, Oregon, Wis.; Daniel H. De Turck, Oley, Pa.; Leo T. Donovan, Wau-pun, Wis.

Arthur L. Edmunds, Franklin, N. H.; Bruce H. Edgington, Mt. Sterling, O.; Albert E. Evans, Chicago, Ill.

Otto C. Faulbaum, Belleville, Ill.; Wm. A. Fitzpatrick, Mt. Holly, N. J.; Wm. Austin Ferry, Put-In-Bay, O.

R. E. Gearhart, Ellsworth, Ia.; Geo. A. Gettelman, S. Ger-

mantown, Wis.; Chas. T. Graf, Harlan, Ia.; Sid Galt, Mt. Vernon, Texas; Wilbur J. Gooder, Des Moines, Ia.; Jas. Curran Glenn, Oxford Jn., Ia.

Harold Martin Halverson, Yankton, S. D.; Frederick Webster Hill, Chicago, Ill.; Wm. K. Howard, Tremont, Ill.; Chas. B. Hillenbrand, Sun Prairie, Wis.; Wm. C. Holtz, Chicago, Ill.; Robt. Jas. Hight, Vienna, Ill.; Bert W. Heath, Princeville, Ill.; John Huebschmann, Baltimore, Md.; J. Edmund Henderson, Toulon, Ill.; Eugene L. Hannon, Pittsfield, Mass.; Chas. Head, Regina, Sask., Canada.

Irvine L. James, Steele, N. D.; Andrew J. Kyle, Sioux City, Ia.; John E. Klem, St. Louis, Mo.; Chas. H. Koon, Maquoketa, Ia.; Frank Koubenec, Chicago, Ill.; Edward I. Keller, Windsor, Ill.; Harry Koll, Walnut, Ia.; Alfred D. Kuhl, Harlan, Ia.; Alphons Miles Kuhl, Harlan, Ia.; Walter P. Kellenbarger, Merna, Neb.; W. G. Kupper, Walcott, Ia.; Volney S. Kellam, Seattle, Wash.; Francis J. Kennedy, Dubuque, Ia.

Robt. Harry Leadlay, Cookstown, Ont.; Ernest A. Lang, So. St. Paul, Minn.; Jas. P. Lang, Woodstock, Ill.; Frank W. Lupfer, La Fayette, Ill.

Eugene E. Main, Carthage, Ill.; Jules Fernando Morel, Mons, Belgium; Alexr. M. Miller, St. Louis, Mo.; J. T. McGilvray, Valley Springs, S. D.; Saml. B. Moon, Rock Rapids, Ia.; T. Irving Miller, Decatur, Ill.; J. D. McFarland, Athens, Ill.; Danl. G. Marks, Chicago, Ill.; Paul A. Mollan, Chicago, Ill.

John R. Nelson, Lake Park, Minn.

Edwin Orton Odell, Central City, Neb.

Edward T. Playne, Chicago, Ill.; Benjamin H. Priest, Newark, O.; Warden W. Parkinson, Savanna, Ill.; Edwin Henry Pease, Fargo, N. D.; Roy Alexr. Purdy, N. Manchester, Ind.; J. Edwin Pyle, Toulon, Ill.

Jay Wilson Reeder, Norwalk, O.; Theo. J. Roesch, Menomonee Falls, Wis.; Arthur B. Rogers, B. S., Caro, Mich.; Ernest E. Robinson, Mazon, Ill.; Alvin O. Rustad, Dalton, Minn.; Arthur E. Rude, Davenport, Wash.; Geo. C. Rasmussen, Harlan, Ia.; Albert B. Ritter, Pennsburg, Pa.; Robt. Augustus Reinhard, Reeseville, Wis.; Olen G. Ruffcorn, Defiance, Ia.; N. M. Repp, Perry, Ia.

Wm. Earl Stribling, Earlham, Ia.; Gearhardt C. Stahl, Chicago, Ill.; James Reid Shand, Honolulu, H. I.; Thos. Alvin Simpson, Milburn, Ky.; Henry J. Schwartz, Paris, Ky.; Wendell Smith, Pontiac, Mich.; H. A. Smothers, Owensville, Ind.; Loys B. Shireman, Richland Centre, Wis.; Herbert Silverwood, Tyn-

dall, S. D.; Hermon Richard Schwarze, Greenwood, Wis.

Chas. E. Titus, Rhodes, Ia.; Theodore C. Tiedebohl, Jr., Chicago, Ill.

Edward J. Watters, Calumet, Mich.; Chas. A. Weber, Reading, Pa.; Chas. David Williams, Odebolt, Ia.; Frank Emil Williams, Odebolt, Ia.

Honor Class.—C. W. Anderson, Thos. E. Anderson, Wm. Henry Dreher, Oliver Perry Dickson, Bruce H. Edgington, Otto C. Faulbaum, Geo. A. Gettelman, Wm. K. Howard, Robert Jas. Hight, W. G. Kupper, John E. Klem, Francis J. Kennedy, S. B. Moon, Edwin Orton Odell, Edward T. Playne, Edwin Henry Pease, Warden W. Parkinson, Arthur B. Rogers, B. S., Jay Wilson Reeder, Wendell Smith, H. A. Smothers, H. R. Schwarze, T. C. Tiedebohl, Jr., Edward J. Watters, Chas. David Williams, Frank Emil Williams.

KANSAS CITY VETERINARY COLLEGE.

The graduating exercises were held on Tuesday evening, March 26th, in the large auditorium of the Central High School. The evening was a pleasant one and a large number of the friends of the graduating class and the college graced the occasion with their presence. The Faculty address was made by the Hon. Robt. J. Sloan, a masterly orator. The President of the College Board, Dr. R. C. Moore, conferred the Doctorate degree on the members of the class in his usual happy manner. The class response to the presentation address was made by Ralph E. Naylor in a spicy, brilliant speech, which found a responsive chord in his listeners. A very pleasing musical program was provided by the students of the college.

The following named gentlemen were granted the degree of Doctor of Veterinary Science:

William A. Anderson, St. Paul, Minn.; James E. Bacus, Harper, Kans.; Frank M. Baldwin, Centralia, Kans.; Irwin E. Barr, Savannah, Mo.; Elbert M. Bates, Alva, O. T.; Francis S. Bingham, Kansas City, Kans.; Benjamin W. Boyd, Esther, Mo.; Z. Carl Boyd, Esther, Mo.; Clinton H. Bugbee, V. S., Keene, N. H.; Henry Burke, Lima, Mont.

Delwin M. Campbell, Meriden, Kans.; Lawrence P. Carstenson, Leigh, Nebr.; Lawrence G. Clark, Nevada, Mo.; Burton W. Conrad, B. Sc., Sabetha, Kans.; Charles M. Corbett, Bayard, Ia.; Clive Daly, Birmingham, Ala.; William A. Davidson, Leavenworth, Kans.; Benjamin F. Davis, Ft. Scott, Kans.;

Allen R. Douthitt, Delta, Colo.; Charles W. Dunn, Paola, Kans.

Howard C. Eliot, Appleton City, Mo.

Hugh Fay, St. Paul, Nebr.; Harrison E. Foster, Fall City, Nebr.

John T. Gaston, Kansas City, Mo.; Benjamin F. Gooch, Browning, Mo.; Harry Grafke, Kansas City, Kans.; William G. Gregory, Plano, Texas.

William J. Hart, Wetmore, Kans.; John F. Hemphill, Arlington, Ore.

J. Ellis Jennings, Shelton, Nebr.; Chas. A. Jerome, Rapid River, Mich.; Elmer C. Johnson, Waldron, Kans.; Robert W. Jones, Moline, Ill.; Thomas B. Jones, Wichita, Kans.

Harry E. Kingman, Boulder, Colo.; Joseph E. Kline, Lamar, Mo.; Virgil W. Knowles, Appleton City, Mo.; John S. Koen, Kansas City, Mo.

Chas. Labash, Passaic, N. J.

Edgar N. LaRue, Marshall, Mo.; Elmer Lash, St. Joseph, Mo.; Frederick J. Lauman, St. Louis, Mo.; Cyril V. Liggett, Peculiar, Mo.; William S. Lowe, Phoenix, Ariz.

Ellis E. McCoy, Ashland, Nebr.; Aaron B. Magill, Blue Rapids, Kans.; S. Benton Manning, David City, Nebr.; Arthur F. Meredith, Kansas City, Kans.; George Morris, Council Grove, Kans.

Joseph E. Nance, Lawton, Okla.; Ralph E. Naylor, Garland, Wyo.; Wm. Oscar Ney, Lake Arthur La.; Clarence L. Norris, North Bend, Nebr.; Ralph E. Noyes, Humboldt, Kans.

L. Bruce Philpott, Brownell, Kans.; William T. Pritchard, Wisner, Nebr.

Joseph C. Reid, Kansas City, Mo.; William O. Rozell, Ottawa, Kans.; Erwin C. Ruth, Kansas City, Mo.

Clarence E. Smith, New Bern, N. C.; Robert P. Smith, Edison, Nebr.; Walter Alvin Smith, Kansas City, Mo.; Zay Shum, Clarinda, Iowa; Walter Sorrell, Dadeville, Ala.; Norman C. Spalding, Payson, Utah; William T. Spencer, Bowling Green, Ky.; Samuel L. Stewart, Albany, Mo.; Clinton L. Stults, Boulder, Colo.; Eugene J. Snyder, Kansas City, Mo.

George H. Tangemann, New Bremen, Ohio; John A. Thompson, B. Sc., Kansas City, Mo.; Robert A. Tucker, Lincoln, Nebr.

Clemence C. Walsh, Burden, Kans.; Chas. L. Wilhite, Greenfield, Ill.

INDIANA VETERINARY COLLEGE.

The graduating exercises were held on Wednesday evening, April 3, at 8.15, at the German House, Indianapolis, and there was a large attendance of friends of the graduates and school.

President George H. Roberts delivered the address and presented the diplomas, while Dean W. B. Craig awarded the prizes. There was an address by Dr. Frank B. Wynn, and the valedictory by Luther A. Thompson of the class. An orchestra dispensed appropriate music throughout the exercises, and altogether it was a delightful event.

The following received diplomas :

Eddie Victor Alexander, Judson, Ind.; John F. Allen, Greenwood, Ind.; Riley Applegate, Indianapolis, Ind.; Robert E. Barnett, Martinsville, Ind.; John Canico, Carlisle, Ind.; John E. Carson, Cicero, Ind.; Leo R. Dudley, Brookville, Ind.; Edward N. Eisenhart, Flora, Ind.; George C. Fann, Bradford, O.; Glenn D. Grogan, Oblong, Ill.; Frank E. Haworth, Indianapolis, Ind.; Leo M. Heimann, Evansville, Ind.; Clarence T. Howard, Carlisle, Ind.; Aaron V. Johnson, Borden, Ind.; Elois G. Kuy Kendall, Carmi, Ill.; John E. Lynch, Indianapolis, Ind.; Franklin C. McCoy, Orleans, Ind.; Hubert O. Moore, Indianapolis, Ind.; Wesley J. Musgrave, Dunkirk, O.; Charles E. Mummert, Young America, Ind.; Wilber Myers, Oakland, Ill.; Willard L. Northcutt, Camden, Ind.; Charles D. Owens, Westport, Ind.; Jefferson Th. Park, Mooresville, Ind.; Franklin L. Parse, Burlington, Ind.; S. C. Phillips, Sheriden, Ind.; Clarence F. Shartle, Lizton, Ind.; Luther A. Thompson, Indianapolis, Ind.

ONTARIO VETERINARY COLLEGE.

In the list of graduates of the Ontario Veterinary College, published in the May REVIEW, our attention has been drawn to the following errors: Elmore C. Gaw, *Sheffield* Vale, Que., should be *Shefford* Vale; *Sampel* J. Gibson should be *Samuel* J. Gibson; Earle B. Hewitt, *Osceola*, Wis., should be *Osseo*, Wis.; Donald T. *Keyson* should be Donald T. *Kemp*; James Henry *Krey* should be James Henry *Keown*; Orrie G. Stevens, Stamford, N. J., should be Stamford, N. Y.; John Gray, Langdon, Alta., should be John Gray *Taylor*.

"PLEASE accept my thanks for the good you are doing for the betterment of the profession. You shall always have my good will and support."—(E. T. Leidy, V. S., Canal Winchester, Ohio.)

OBITUARY.

EUGENE BURGET, D. V. S.

We greatly regret to announce the death of Dr. Eugene Burget, which occurred at his home in Wadsworth, Ohio, the early part of May, after a protracted illness from carcinoma of the lower intestine, to relieve which a delicate surgical operation had been performed, though with only temporary benefit. The deceased graduated from the American Veterinary College in 1883, and for a number of years practiced on the west side of New York City, being associated with Dr. James L. Robertson. He retired from active practice about ten years ago, and returned to his old Buckeye home, where soon afterwards he was unanimously elected Mayor of Wadsworth.

In the death of Dr. Burget the veterinary profession has lost one of its most loyal and honorable members, and the world a nobleman. It is said of him that he had not an enemy and that he never harbored an evil thought of fellowman. He was a member of the American Veterinary Medical Association and a frequent attendant upon its meetings, wherever held, where he and his old mentor were familiar figures. Between these two there had existed for many years an affectionate friendship which endured to the grave, and pilgrimages from the West to the East or *vice versa* were of frequent occurrence.

BERNHARD LAMBRECHTS, M. D., V. S.

This well-known veterinarian died at his home in Granite Falls, Minn., March 20, and was at the time of his death the oldest practitioner in that state, having been born at Christiansa, Norway, on April 15, 1828. He graduated from the Copenhagen Veterinary School in 1853, and served as veterinary surgeon in the Norwegian army for twelve years, and was employed by his government for some time in the eradication of contagious diseases among domesticated animals. Emigrating to America in 1867, he practiced in Wisconsin, Minnesota, Iowa and Texas. He was located at Willmar, Minn., for eighteen years, moving to Montevideo in 1890, and after practicing there for ten years located at Granite Falls, where he died. The deceased, besides holding a diploma from Copenhagen, studied for two years in Vienna, and held an M. D. degree from St. Louis.

Dr. Lambrechts was the author of several works on medicine, and held many positions of honor in both Norway and America. He was a member of the Minnesota State Veterinary Examining Board for eight years, most of the time being its President. He was the father of Dr. T. Lambrechts, V. S., of Montevideo, Minn.

JOHN CASEWELL, M. R. C. V. S.

Dr. Casewell died at Chicago, Ill., Feb. 7th, 1907, after an illness of two days, from apoplexy, aged 61 years. He was born in Shropshire, England, and graduated from the Royal Veterinary College, London, April 20, 1871, coming to the United States in 1877 and settling at Petaluma, California, where he commenced practice. After some years in practice he joined the 4th U. S. Cavalry, in which he served chiefly in New Mexico, and at the expiration of his term of service received an honorable discharge. He went to Illinois and settled in Chicago in 1885, and was appointed State Veterinarian in 1886, which position he occupied until 1892. He then engaged in general practice, his specialty being the treatment of thoroughbred horses.

Dr. Casewell was married and leaves a wife, but no children.

CORRESPONDENCE.

NEW VETERINARY SCHOOL IN CUBA.

SANTIAGO DE LAS VEGAS, April 29, 1907.

Editors American Veterinary Review:

DEAR SIRs:—On May 1st, 1907, there will be opened a private Veterinary College in Havana, Cuba, with the following staff of professors:—Dr. Francisco Etchegoyhen, of the Special Veterinary School of Madrid, Director; Dr. Honoré F. Lainé, of the University of New York, Chief of Medical Clinic; Dr. Julio Brouwer, of the National Schools of France, Chief of the Surgical Clinic; Dr. Ricardo Gómez, of the Special Veterinary School of Zaragoza, Chief of Laboratories; Dr. Francisco del Rio, of the Special Veterinary School of Córdoba, Secretary. The College is called "The Free School of Veterinary Medicine."

Yours respectfully,

N. S. MAYO.

BREEDING EXTRAORDINARY IN THE PHILIPPINES.

A letter from Dr. R. H. McMullen, who has recently returned to the United States, after an absence of about two years in the Philippine Islands, where he was connected with the Board of Agriculture as veterinarian, gives the following data concerning some interesting official documents on file in that department :

"A non-graduate named H. L. Casey, of Paris, Kentucky, accompanied a ship load of horses to the Philippine Islands in 1904, and he was afterwards assigned to veterinary duty at the Government Stock Farm in the Province of Benguet. Casey, after a somewhat varied career, resigned and returned to the homeland. From his station on July 8 last he sent to the Director of Agriculture, Manila, a telegram, copy of which is enclosed. The Director, W. C. Welborn, replied to Casey as per attached letter, a copy of which was furnished to the Hon. A. W. Fergusson, Executive Secretary of the Philippine Islands, who could not allow the opportunity to pass, so burst out into verse as submitted."

* * *

CASEY'S TELEGRAM.

TRINIDAD, July 8, 1906.

Welborn, Manila :

Another American mare had a colt last night ; filly colt, also 16 pigs by American boar.

CASEY.

* * *

THE REPLY TO CASEY.

THE GOVERNMENT OF THE PHILIPPINE ISLANDS,
DEPARTMENT OF THE INTERIOR,
BUREAU OF AGRICULTURE.

MANILA, July 12, 1906.

SIR :—We have your report, dated July 8th instant, which reads as follows : "Another American mare had a colt last night ; filly colt, also 16 pigs by American boar."

This beats the record. I have known an American mare to bring two colts at a time ; I heard of one that brought a horse colt and a mule colt at one birth, but never before heard of one that brought a colt and 16 pigs all the same night.

Luther Burbank, the Wizard of Horticulture, has, I believe, crossed the tomato and potato and performed other wonderful

feats. I am glad it has been reserved for you to effect a cross between the horse and hog. You will go down in history as certainly coming next to the man who crossed his bees with lightning bugs so they could work all night. Who will rise up and say after this that the Agricultural Bureau is not doing anything?

Respectfully,

(S) W. C. WELBORN, *Director.*

Dr. H. L. Casey,

Government Stock Farm,

Baguio, Benguet.

A true copy of the record of this Bureau received July 22, 1906.

(S) A. W. FERGUSSON, *Executive Secretary.*

* * *
THE POEM.

The pine-clad hills of cool Benguet
Where leads the road unfinished yet,
Have been the theatre where Surprise
Has pried apart our mouths and eyes;
For bounteous Nature, with her last,
Has all her former feats surpassed.
What, now, are Burbank's grafting deeds,
Marconi's stunts—whose genius speeds
A message on a wireless track,
And makes of space a "jumping jack?"
Where now does Edison hold sway,
Or radium's finder, Pierre Curie?
Does not this deed alone suffice
To render all that men or mice
Have wrought since days of Tubal Cain
Infinitesimal and vain?
No man before has seen a dam
Provide the rudiments for ham,
And not content with razor-backs
Shell out her quota for the tracks.
It seems like thistles yielding figs
To have a mare drop sixteen pigs;
And truth receives a serious jolt
To find the seventeenth a colt!
Can anything on earth compare
With this performance of the mare?
But, hold! For while we eulogize
There is another claims a prize,
And puts to shame all gone before:
I mean the potent Yankee boar.
What lowly hog did yet aspire
To ribboned fame as race-track sire?

Consult the annals of all time,
Great deeds extolled in prose or rhyme;
Delve deep in Clío's treasured store,
Exhaust encyclopedic lore,
You will not find a word or line
That tell of such potential swine.
No record yet recounts a deed
With such results from porker's seed.
Had he but lived in days gone by,
When Richard raised his voice on high
And offered kingdom for a horse,
To him he might have had recourse,
And found within his bristly loins
The link that pork and horse-flesh joins.
Where best, if not the Philippines,
Amid the piney woodland scenes
That lull the senses into rest,
Could come the genius of the West,
And show, as oft it has before,
The might of Yankee mare and boar?
Now, while we give our meed of praise
To those who would these Isles upraise,
Forget not him who planned all that,
For it was "Casey at the bat."

A. W. F.

*Manila, P. I.,
February, 1907.*

THE WORKING OF THE MEAT INSPECTION LAW.—In a recent interview with Dr. A. D. Melvin, Chief of the Bureau of Animal Industry, he had the following to say of the operation of the new meat inspection regulations: "After being 10 months in force the new inspection law is giving unqualified satisfaction. Both railroads and packers are aiding us in securing thorough enforcement. Many small packers ignored the law entirely until railroad managers brought them to their senses by refusing to accept their shipments. Inspection has been withdrawn from forty-six establishments. Of these 12 were for cause, mainly on account of failure to maintain the proper standard of sanitation. Some were found to be using prohibited preservatives. Most of these establishments preferred to forfeit their interstate trade rather than stand the loss incidental to condemnation of animals and product and bear the expense of complying with sanitary regulations. This emphasizes the necessity for a thorough state or city inspection of such establishments as refuse to submit to federal inspection."

SOCIETY MEETINGS.

MINNESOTA STATE VETERINARY MEDICAL ASSOCIATION.

The meeting was called to order at the Merchants' Hotel, Minneapolis, by President Price, Jan. 9, at 2 P. M.

Roll-call showed 54 members present. The minutes of previous meeting were read and approved as read.

The President then gave his address, as follows :

PRESIDENT PRICE'S ADDRESS.

"It is with pleasure, greater than most of you may realize, that I, as one of the earliest graduate veterinarians to locate in this state, see so many members of the profession present at our meeting to-day. Looking back over the reports of the earliest meetings of the Northwestern Veterinary Medical Association, I find the membership confined to four graduated veterinarians of the Twin Cities and a couple outside of the state. In fact, we had all the graduated veterinarians of the state excepting two. The original nucleus, with one exception, the late Dr. Sermon, of Minneapolis, are still members of the Veterinary Medical Association, although its title has been changed. At that past period quacks held sway, and gave us 'young kids' the laugh as being highly scientific, but not practical. Our laugh came later and a good deal louder; but not without many an anxious contest both in court as experts, and in the field at post-mortems. You may imagine our feelings for a day and night previous to the holding of an autopsy to test our knowledge in ante-mortem diagnosis. Going up for finals at college or preparing a presidential address are nothing in comparison. With increased requirements of both matriculation and graduation, there has been a noticeably beneficial result; the old-time 'horse doctor,' addicted to good fellowship in all its most vulgar phases, has been replaced by the educated practitioner of greater refinement and better habits, whose ideal is professional success; and honesty of purpose is more considered than ultimate financial gain—a virtue sadly lacking in many paths of business to-day.

"It is not yet fully recognized by the public that *the wealth and success of a farming community and of the country gener-*

ally depends largely on the intelligence of its veterinary practitioners. In other countries enormous losses of live stock have occurred from rinderpest, contagious pleuro-pneumonia, foot-and-mouth disease, etc.; these fatal maladies have been prevented from gaining a foothold in Canada through the power vested in its now ex-chief veterinarian, Prof. Duncan McEachran, and is being looked after to-day by his able successor, Dr. Rutherford. In this country the authority vested in our chief veterinarian was more curtailed, causing greater obstacles in the duties of Dr. Salmon, who for nearly a quarter of a century ably carried out the sanitary measures of prevention and extermination of those diseases in this country, and which is being continued by his worthy assistant, Dr. Melvin. Russia, in the years 1844-45, lost over 1,000,000 head of cattle from rinderpest alone.

"Glanders and tuberculosis are two most destructive diseases insidious in their onslaught, yet brought within our ken by modern progress and the intelligent use of diagnostic agents, which enable us to discover infected animals that otherwise would defy the most careful and thorough examination.

"Tuberculosis:—The United States has less of this disease than most other countries, but it is increasing. The federal meat inspection statistics of cattle in 1895 showed 407 per million; 1901 showed 1,285 per million. Hogs in 1895 showed 29½ per million; 1901 showed 352 per million. Tests of *pure bred* cattle coming in from Canada showed 24 per cent. to be tubercular and from Great Britain 50 per cent. Phthisis (tuberculosis of lungs).—In human beings during the past 50 years the mortality has been reduced in England and Wales nearly 50 per cent., and general tuberculosis, about 40 per cent. (includes all forms). *Tabes Mesenterica*, 8.5 per cent.; under five years of age 3 per cent.; one year of age, *increase* 27.7 per cent.

"These statistics were quoted by Sir R. Thorne Thomas in the *Harben Lecturer*, 1898, in England. Prof. von Behring in a paper read last year claimed that boiling milk reduced its nutrient qualities, and that calves fed on it lost flesh and became emaciated. This is probably true if the milk was boiled for more than a few seconds, as coagulation of the albumen and casein would take place, but if the milk were merely brought to a boil and then removed from the fire, this would not occur and the milk would retain all its natural qualities and no coagulation take place; yet the germs would be so reduced in vitality that they could be ingested in the milk with little danger.

Milk boiled in this way forms a finely granular mass in the stomach, digesting *more* readily than raw milk, the latter forming a large curdled mass. This can readily be proved by feeding puppies, one lot on properly boiled, as above described, and the other on raw milk. Then after an hour or more killing the subjects and examining the contents of their stomachs. To me it seems to be a question *between feeding virulent milk*, or milk in which the bacilli and other germs have been rendered harmless. My own children were never allowed any but boiled milk. They are now 17 and 19 years old respectively and both are larger than their parents, vigorous and apparently in the best of health.

"If, according to the theory of many scientists the resistance to disease depends on the proper stimulation of certain glands in the body, the fact of feeding germs of reduced virulence should accomplish this result and render the system capable of resisting any moderate invasion. Yet overstimulation must be avoided as paralysis results therefrom, and germs conquer the resisting power of the system, then disease results; which, if severe, causes death; but if not, the glands, especially the ductless ones, pituitaries, thyroids, adrenals, and tripsin-forming ones, regain their function, secreting the necessary stimuli which cause destruction of the invading germs of disease and the elimination of them and their secretions from the system.

"Feeding experiments have abundantly proved the contagious qualities of milk from tuberculous cows, and to doubt its danger is an evidence of either ignorance, gross lack of knowledge of facts, or bias.

"Many other diseases of a contagious or infectious nature have been recognized, their causes elucidated and preventive measures successfully prescribed. With incompetent veterinarians these and other diseases would sweep the country from end to end, causing enormous losses to the farming communities and in many cases absolute ruin. To the veterinary profession is due the credit of the exclusion from the United States and Canada of those fearfully contagious diseases, rinderpest, contagious pleuro-pneumonia, and foot-and-mouth disease, besides others known to exist in India, China, the Philippines, and elsewhere, and the bringing under control of those contagious diseases which exist at present in this country. Let us look forward to the time when all such diseases shall belong to the history of the past and be unknown to future generations. Rinderpest, contagious pleuro-pneumonia and aphtha are un-

known to most of us to-day. As to myself, I have seen none of the latter diseases since I left the old country, nearly 35 years ago, when I remember the big pits dug for cattle, into which they were dumped by scores, covered with quicklime and dirt; and well do I recall the pleasant, health-giving, muscle-developing, anathema-exploding exercise of catching steers and cows in the open fields, lifting their hind legs and applying nitric acid and other soothing remedies to the excoriated hoofs. They stood quiet. Oh, yes, but I generally flew somewhere as did the others, when their turn came to hold the hoof. As the weather was invariably wet and the ground mushy, our appearance can readily be imagined. The greatest losses, I should state, were from the rapid emaciation that accompanies an attack of foot-rot or foot-and-mouth disease, rendering fat animals lean and unfit for marketing in a few days. The terrible days of rinderpest and human cholera bear parallel horror in my mind. In both cases burials could not be made rapid enough to dispose of the dead. Human corpses were carried past, often by drunken bearers on canvas stretchers, covered or uncovered with a sheet, according to the condition of the men carrying it. These horrible sights have been prevented, by the intelligence of our human and veterinary practitioners; from invading our homes as well as country. *How thankful we should be* can only be realized by the few who have seen the fearful havoc. *How thankful the community should be* can also be similarly stated, as those who have not seen cannot realize its awfulness.

"Rabies has now a good foothold all over the United States. Thanks to the Society for the Dissemination of Disease, called by themselves Humane Societies, who, with a few other cranks, have vigorously opposed the only successful method of eradicating this malady. I have seen muzzling enforced in England, and can state that dogs showed no objection or discomfort, when a properly fitted muzzle was put on them; on the contrary, they seemed pleased, as they knew it meant a run and exercise. Furthermore, it prevented poisoning and fighting.

"Glanders in this state is being rapidly exterminated, yet the state does not realize the danger, and the allowances made to meet the expenses are ridiculously small. Nevertheless, Dr. Ward and his worthy assistants have done splendid work in discovering outbreaks in camps where the disease exists, and destroying the affected animals. To our west glanders has spread to a most alarming extent, and is prevalent all around us, making it very difficult to keep track of affected animals brought

into the state. Quackery has enabled the disease to spread in a great number of instances, where an intelligent veterinarian would have recognized the danger and taken proper precautions, in many cases almost ruining the unfortunate owner.

"Our state authorities are too lax in prosecuting illegal practitioners, often fearing political influence, thus causing great losses to the community unfortunate enough to sustain an empiric. Active measures must be adopted to stop their illegal practice, and now is the time to do it.

"The standards of our veterinary colleges are being raised; the requirements for admission in some are of as high a standard as for medical colleges, and I hope to see all placed on an equally high basis, superintended by worthy trustees, and supplied with competent professors. It was, and is yet, often a matter of pecuniary gain. Everyone was admitted who could write and read, and this in many cases very insufficiently. Numbers, not quality, was all they desired. The result on the community can be well imagined, and the stigma placed on the profession realized. McGill University had to close its Veterinary Department for lack of competent applicants. Inferior colleges turn out inferior material. The success of the profession from any point of view depends on good colleges, where the rough material can be converted into a finished article of the finest quality.

"On individual members the success of the profession depends. Let us all try to add our quota of knowledge and strive earnestly by example to raise the standard in the state both by our actions, deeds and researches. Only last week I was told by an Eastern member that our Veterinary Medical Association reports were eagerly read and were evidence of the ability of our members; that we were considered as being among those in the van. Let us continue to earn this good and kindly tribute by both individual and united efforts for our professional advancement, by each in turn giving a few moments occasionally to investigation, preparation and presentation of scientific and practical articles at our meetings." [Applause.]

The treasurer's report showed a balance on hand of \$182.70.

REPORT ON INFECTIOUS DISEASES.

Dr. Whitcomb presented the following report:

"This report is for the last six months. There were 5,795 cattle tested, of which 466 reacted. Dr. Coffeen tested 929 cattle at South St. Paul, with only five reactions. There were also 420 cattle tested on arrival in the state, with 39 reactions.

There were 474 horses tested for glanders, and 208 killed. Also 41 horses killed on arrival in the state on account of glanders, making a total of 249 horses killed. Hog cholera has appeared in the following counties: Blue Earth, Big Stone, Chisago, Carver, Douglas, Dakota, Cottonwood, Faribault, Jackson, Le Sueur, Kandiyohi, Martin, Meeker, Rock, Renville, Redwood, Rice, Washington, Watonwan, Yellow Medicine, Aitkin, and Wabasha Counties. It might be interesting to tell you that I saw a case of glanders in a man at Beardsley, Minn. We were notified that he had glanders, and I was sent there and tested his horses and found two clinical cases. At that time the man had a swelling of his left hip, but the physician suspected glanders at that time. They sent material to Dr. Wesbrook, and a diagnosis of glanders was made. From his hip it went to his instep, an abscess forming which later healed, and they thought the man was going to recover. A few weeks later there was an abscess in the right wrist, and that nearly healed up; and at this time, Dec. 31, 1906, the right arm is affected, and they expected to amputate his arm, which will probably result in death. His temperature was about 103°."

Dr. Price: In regard to infection from animals, I would state a somewhat similar instance. I met a man on the street whom I knew pretty well. This was about two weeks ago, and he said he was going to be operated on the next day, as they told him that he had tuberculosis of the arm. I said to him: "Where did you get it?" He thought he got it from a splinter off an elevator. I suggested that he helped butcher something, and he said he had helped a man butcher a calf, and the man said it had lumps in the lungs, and he had a sore on his hand at that time. I told him he had better have a microscopical examination made before the arm was taken off. The doctor had a smear made. The gland under the arm was enlarged and sore and there were pains through his chest. The microscopical examination proved that he had botryomycosis, which is a similar infection to actinomycosis, and he is now on the iodide of potassium treatment, and is very likely to be cured and not lose his arm. This shows how careless some physicians are, especially surgeons. When the man found out he was not going to lose his arm he came with tears in his eyes to thank me.


As several members of the different committees were not present, the applications for membership was next taken up.

Dr. Price: There is one application from Dr. Geo. A. Dodge, graduate University of Pennsylvania, 1904, practicing in North-

wood, Iowa. According to our by-laws we can only take members that have a license to practice in the state, but if any one will make a motion to suspend the rules we can elect him under suspension of the rules.

Dr. Whitcomb: I make a motion that the rules be suspended to elect him.

The motion was seconded and carried, and Dr. Dodge was elected a member.

 The other applications were laid over until later, as many were taking the state examination.

ELECTION OF OFFICERS.

Dr. Price:—We will take up the election of officers.

The election resulted as follows:

President—Dr. Geo. McGillivray.

First Vice-President—Dr. W. Amos.

Second Vice-President—Dr. O. Rydell.

Secretary-Treasurer—Dr. C. A. Mack.

Board of Directors—Drs. C. E. Cotton, A. F. Lees, M. S. Whitcomb, J. P. Anderson and C. T. Eckles.

Dr. Price: Owing to the absence of some of the members of the committees who are to report, it is suggested that Dr. Annand read Dr. Cook's paper.

FURUNCULUS.

BY J. W. COOK, V. S.

"In selecting the disease known as 'Furunculus' for a paper to be read before this association, I do so from the fact that, located as I am in the northern part of the State of Minnesota, where this disease seems to be much more prevalent than in the southern portion of the state, very many cases have come under my observation and treatment.

"Just why this disease is more prevalent in the north than in the south I am not prepared to say, possibly certain climatic conditions more conducive to the growth of the microbe producing this disease; the fact remains the same as during eight years practice in Indiana State I did not see one single case of furunculus, while here in Duluth I am seldom without from one to as many as one dozen patients suffering from this disease, and this being the case for the past seven years I have had every chance to observe and experiment with this disease and indeed for the first few years it was largely experiment, as I could find but little in veterinary literature to assist or benefit me in my work to relieve the suffering animal and get him back to work before

my client had a reasonable excuse to kick about the size of his bill (I must say as an assistant financially to the veterinarian the disease is a gem).

"This disease is no doubt due to a microbe or germ; this microbe so far as I am aware has never been isolated; I do not believe there has ever been a satisfactory bacteriological analysis made. While more prevalent in the north still its ravages are not confined to the winter months, but is more prevalent in wet weather, spring and fall; also frequently seen in midsummer as well as in winter. Infectious I also believe it to be, as I have seen as many as a dozen cases in one stable in a period not exceeding two weeks; we find it out in the lumber camps as well as in the city. One lumberman at Iron River, Wis., lost through this disease sixteen head of fine horses in a few weeks before I was called to prescribe; and I found five head affected on my arrival, but am pleased to state he lost no more horses with furunculus since that time. In every case coming under my observation I have been able to find evidence of some abrasion of the skin often so slight you may have to remove the hair with scissors or clippers to find the injury, often a mere scratch, in other cases a wound of some size, a tread or calk, or from interfering or brushing; again you will find it as a sequel to mud fever or scratches.

"*Symptoms.*—The symptoms vary according to the severity of the case and the time elapsing from the first manifestations of the disease until your assistance is requested. As a rule the disease is located below the fetlock joint, seldom located above the fetlock, but often on the inside of the fetlock, the microbe gaining admission through an abrasion at that point from the horse interfering.

"Where you find the disease from a slight scratch or abrasion of the skin, not enough in itself to produce lameness, you recognize the fact that the disease is present by the extreme lameness exhibited, also very sensitive to pressure. On making an examination you will find an inflamed area at some certain spot or place from an inch to several inches in extent, heat, redness, pain and swelling, the swelling sometimes extending well up the limb. If the subcutaneous tissue is involved, which is usually the case, you will have a temperature of 102 to 104, pulse 50 to 60, respirations quickened, and very little desire for food. If the disease has been neglected, or treatment postponed until you have open joint, as a sequel, the temperature will rise to 105 or possibly 107, pulse 80 to 100, respirations 30 to 40, a

very haggard expression, with tucked up flanks and probably death; however, such a termination is only found in an animal where treatment has been long delayed or from improper treatment.

"In milder cases there is only slight lameness, no elevation of temperature or pulse, the inflamed area limited and just the cutaneous tissue involved, with a small slough of necrotic, cutaneous tissue. In from three to five days after the first symptoms of the disease, you will notice at about the centre of the inflamed area a slight exudate, usually of a yellow gelatinous nature, tinged with blood (which if the disease is not checked rapidly increases in quantity); during the next 24 hours there will be an almost complete line of demarcation usually in an irregular circular line denoting the separation of the necrotic from the healthy tissue. This piece of necrotic tissue will either drop out or can be easily separated from the live tissue, exposing underneath an ulcerous looking cavity varying in depth according to the amount of tissue involved in the necrotic process, containing a yellow colored debris and probably a portion of a partially decomposed tendon or ligament, with a red granulated hæmorrhagic surface, that bleeds very freely on being manipulated, showing small granular-like elevations of tissue which sometimes prove to be the ends of severed blood-vessels which are possibly more capable of resisting the necrotic process of the disease or the attack of the microbes; these often burrow deep underneath the ligaments and tendons, destroying them in the process, and if not arrested eating into the capsular ligament and allowing the escape of synovia, and death is sometimes the result.

"*Prevention.*—Furunculus may be prevented to a great extent, especially in spring or fall, or during wet weather, by the teamster or stableman carefully disinfecting any wound, scratches, abrasions, calks, etc., found on horses after returning to the stable, or at the time any such accident may have occurred.

"*Treatment.*—Early antiseptic applications continuously applied will alleviate, cut short and limit the area involved in the suppurative or necrotic process, and you will have a very small slough, in what might be a very deep and dangerous slough of necrotic tissue. Oakum or cotton batting lightly bound on with a muslin bandage and kept continuously moist with a solution of bichloride of mercury, 1 to 1000, carbolic acid, 1 to 50, or any of the coal tar preparations, will be found

very beneficial. Also give a good purgative and advise a laxative diet; to counteract the fever use diuretics, also sodium sulphite in half-ounce doses, three times daily, that is, in the early stages of the disease; later use tonics, iron, nux vomica, gentian, and advise a more nutritious diet to keep up the strength of the animal.

"After the necrotic tissue has sloughed out or been removed—and I recommend the removal of all dead tissue as early as possible, which is easily done with curette, forceps and scissors—curette all the parts freely, making sure you get to the bottom of every nook and corner of the ragged looking surface. You will have a profuse hæmorrhage; arrest the hæmorrhage with a styptic pack bound on tightly for about 30 minutes, then remove the pack and apply freely with a camel's hair brush or small syringe, tincture of iodine and iron, 3 parts of iron to 1 of iodine, painting well outside the borders of the diseased part; (for this iodine and iron treatment I am indebted to Dr. Lyford, of Minneapolis, who gave us a lecture on this disease at the A. V. M. A. meeting in 1902), and I have found it more beneficial and obtained better results from this than any other remedy I have used; but I use the iodine somewhat stronger than recommended by Dr. Lyford; apply it twice per day for a few days or until the discharge ceases, also after each application of the iodine and iron use an astringent healing powder of boracic acid 5 parts, tannoform 1 part; continue using this powder until a scab forms, then apply an ointment until all is healed over. I have also found dried ferri sulph. good treatment in some cases, also bichloride of mercury, caustic solution, tr. catechu, tr. benzoin and carbolic acid, equal parts; all are more or less of value, and may be tried if the disease does not respond to treatment with the iodine and iron. Poulticing is of no benefit and must not be allowed, as I have had to destroy some fine horses that had been freely poulticed before called to attend the case; it seems to feed the microbes, and they get in their destructive work rapidly. I believe the disease is alone peculiar to the equine animal, as I have not seen a case in any domestic animals outside the horse."

Dr. Cotton: My experience with furunculus is rather widespread, I think, and I do not believe I accept Dr. Cook's paper, for I cannot agree with him in some of his statements as to treatment. I believe that these should be poulticed with an antiseptic solution until the sequestrum sloughs off. I do not believe you are justified in curetting, for when you do curette

down to the healthy or fresh tissue you simply leave a surface for reinfection, which you are bound to get when the sequestrum is not separated, but I believe in antiseptic poulticing until the sequestrum can be gotten out. I believe in soaking for an hour at a time, and then take out and put a cotton dressing on soaked in bichloride solution, placing oiled silk over it, and it will stay moist for 24 hours. As far as the internal treatment is concerned, I do not believe in a purgative. I have better results from large doses of quinine and sulphur, and after the sequestrum separates and there is a good healthy wound, follow with a dry bottom dressing with antiseptic dressing of cotton.

Dr. Lees: Why do they call this disease furunculus? Why should it not be classed as an infection from an abrasion? Why do you want to class it as a separate disease any more than any other infection from a wound or abrasion?

Dr. Cotton: The only way I can answer that is, Why do you call azoturia, azoturia? We have to have a name for it. Furunculus does not specify the disease at all. We get furunculus in any season of the year, in dry seasons, from a little bit of a scratch. Even race horses under the best of care have it, but all the pathological lesions are the same as this so-called furunculus, but they have to name everything, not only to the client but to the profession as well.

Dr. Lees: We all have cases of infection. We have them from interfering perhaps around the feet, around the part of the limb that comes in contact with the hoof, and whether there is any specific germ or virus that takes hold in those places more than they will at any other part of the body, it seems to call for some question. You can get a prick from a fork in a horse and get furunculus from that. We might call it erysipelas; there is sloughing. I think probably the local trouble of furunculus might be somewhat nearer erysipelas than any other infection.

Dr. Price: I think I can answer Dr. Lee's question. Furunculus was the name given to it by Prof. McEachran. It used to be called carbuncle of the coronary band. I remember a case at the Fort. They had no fires in the barns and we had to work out in the open, and it was 20° below zero. When I got through dressing I just went to the nearest house where I could thaw out my fingers. I drove home and had my instruments washed by the office boy, and the hobbles washed off by the barn man; in a few days we were all fit for the hospital. I got infection of my finger, a gland in my arm enlarged, and the

disease spread to the back of my neck ; I never suffered such agony in my life. It was walk the floor day and night. The office boy had to be treated by the doctor, and the hired man had to be treated, and they called it carbuncles in our cases. I think under the circumstances there can be no doubt as to where the infection came from. I had to have the abscess lanced. It formed characteristic carbuncles in every one of our cases.

Dr. Lees: I think that carbuncle of the coronary band and this disease are different.

Dr. Price: Dr. Lyford, your name has been brought into this discussion, and we would like to hear from you in regard to its pathology.

Dr. Lyford: I cannot go into the microscopical biology, but think Dr. Beebe or some of the microscopical members ought to talk on that. Dr. Wilson said that it was a specific germ and that he wanted us, the first time we had an epidemic, to call him in and see if it could not be treated by hypodermic injections, as he thought it belonged to the family that is so common in pus lines, of which I was trying to think just now as you were speaking, but I think it was the streptococcus, and he believed that some line of treatment in that way could be used that would overcome the trouble. I had only a few isolated cases while he was at the University and consequently never got at it to give it a trial. You may remember, Dr. Price, that Mr. Murphy, of my class at college, was poisoned during an epidemic of this trouble. I do not believe we understand the pathology until we understand the germ that enters into it, and as I never had a chance to put that through the test I cannot state what the conditions are, but think that probably what Dr. Wilson said was the true pathology if it was ever followed out, and the germ in that way could be easily traced if thoroughly tested. Under those conditions I do not believe there is anything further to say.

Dr. Price: In regard to the symptoms shown by Mr. Murphy, do you remember them?

Dr. Lyford: It was about the time we had so much of this and also had equine small-pox, winter and spring of 1877, and it was a question which he was supposed to have. He had a crack in his lip and inoculated that by blowing his finger, which was sore, and he was quite a sight when he came to the class ; it was our last year, '77, and my final year as a veterinary student ; he was to enter into the discussion, and his lip was filled from his teeth to his nose. He said he was not sick, but looked as

though he was laughing all the time. It took nearly two days for the swelling to go down. He had an abscess on the finger, and also turned it to a laugh in questioning Dr. Osler regarding its cause and effect.

Dr. Annand: I have had a few cases since I went to Duluth. There is something a little more peculiar about the condition than we find from ordinary abrasion of the skin, especially in a locality where there is plenty of it. You frequently find an animal going nicely to-day and so sore to-morrow morning that it will not put a foot to the ground. You will find more or less profuse swelling from the seat of infection well up to the limb in that length of time, and, as Dr. Cook said, you have sometimes difficulty in finding the real seat of infection; you have to hunt around, and if it is any length at all it will take some time; but it will always be a little bit of a moist spot, varying in size, but usually about the size of a round lead pencil; it seems that the infection starts there, and is absorbed so readily that the connective tissue under the skin becomes highly inflamed in that length of time. The best success I have had in dealing with it since I have been there is the sooner that I can puncture a hole so I can get an antiseptic into the seat of infection the better results I get. I usually get after it so as to make an opening to get into and get the antiseptic dressing on. In regard to poulticing, Duluth is not a very good place to use poultices, consequently you see Dr. Cook's results. Dr. Cotton may have had better results here than we have. I have tried poulticing a few cases that apparently had no particular difference in appearance as far as the extent of infection or the temperature or place of infection, and I got the worst results: a larger sloughing, and the horse takes longer to heal up than where I took a small scissors and clipped away the skin and got antiseptics directly in action with the connective tissue. I get better results than to wait until nature has thrown off that necrotic condition. I think Dr. Cook's idea of the purgative is this: the horses in Duluth are required to do a great deal of work and are fed very heavily and so we have that condition that we get a quicker control of the disease by a good purgative. I get better results from purgatives than from quinine, and by getting the system cooled off I have had better results and quicker recovery from using a purgative. I have only been in Duluth since the first of May, and have not had the varied experience that Dr. Cook has had in the seven years he has practiced in Duluth. We have some men fairly versed in poul-

ticing, putting on the poulticing hot and using antiseptics, but we have had some terrible sloughs following. You will sometimes find a locality infected and then the necrotic condition of the skin the size of a quarter, and to-morrow morning you will find another one an inch from that, and sometimes they will follow one after that above and including the coronary band. We have the limb swelling clear up into the body in some cases; that is, the aggravated cases.

Dr. Neumann: Under this head I might relate a little experience with the furunculus of the coronary band. Having dealt with them a few times previously, and always finding that they covered a long period of time, practically hurting the value of the horse before it was ready for the harness, and then occasionally dying, I undertook to use a radical treatment last summer, which consisted of injection of saturated solution of bichloride of mercury, diluted with acetic and hydrochloric acids. This was a valuable mare, eight years old, that came to me last spring. I injected the joint, from which she suffered most excruciating pain. Possibly after 24 hours she began to show up more, and within three days was again eating. The fistulous openings I kept open and inserted a wad of cotton saturated with same solution into openings, leaving over night and taking out in the morning, causing a sloughing within two or three days to follow. Continued this as long as necrotic coronary tissue was left. I found that after the first side had practically granulated, by manipulating the other side with probe and finding opening possibly three inches long where if I had allowed the front sinuses to close would break on other side. I repeated treatment, and as that granulated the animal made a fine recovery, and she was back in the harness doing work within 60 days after the time of this injection. It rather appealed to me, and for that reason I mention it. I may say that my object in injecting this mare was to kill her, because I was disgusted with the treatment, especially where I had open joint, but the results were so satisfactory that I almost feel like recommending the treatment. I might say that this mare since (three months after) was sold for \$125, and she is walking perfectly sound, but having a ringbone, which was in evidence at the time of injection. I think there is a complete ankylosis there.

Dr. Price: Dr. Lyford, we will call on you for your report on surgery.*

* Will be published in the July REVIEW.

DR. BEEBE'S REPORT ON AGGLUTINATION.

Dr. Beebe: I think one of the most interesting things is the work on agglutination for glanders. This test is used in place of mallein. The great advantage is that it only requires a short period of time. The test is made in the following manner: The blood is drawn in some kind of a bottle; it is usually better to sterilize the bottle, although not absolutely necessary. The better way to draw blood is from the jugular, about 10 c. c., and allow it to stand for 24 hours until the serum is well separated from the clot. Then the serum is drawn off through a pipette and 1 c. c. of this serum is diluted with 39 c. c. normal salt solution. Then an agar culture is taken and the growth on the surface is scraped off and a small amount of normal salt solution that contains a .5 per cent. solution of carbolic acid is added. This growth on the surface is then thoroughly mixed with carbolic solution and poured off into a sterile bottle. The substance is heated to 65° C. for two hours, in order to kill the germs. It is then filtered to remove all the solid parts of the culture that are present, and then this substance is diluted with salt solution that contains .5 per cent. solution of carbolic acid. It is diluted so that it is faintly cloudy. Varying amounts of the diluted serum and .3 c. c. of the suspension of *Bacteria mallei* are mixed together so that dilutions of from 1-100 to 1-1000 are obtained. The mixture is then placed in the incubator at 37° for 24 hours. If you get a reaction the organism will be thrown down on the bottom of the test tube. Usually this takes place in about twenty-four hours. There is one thing against this test, and that is serum of normal horses will agglutinate in dilutions of 1-200 and sometimes in solutions of 1-500. Of course, serum of normal horses agglutinating at 200 or 400 or 500 leaves the result rather doubtful. This method has been adopted in Austria as the efficient test. In Russia they are using it for testing the army horses, and there are a few men who have adopted it in this country, but I think we ought to try it more thoroughly before putting it into universal practice.

This winter I wish to make a large number of tests, if possible. I think this is perhaps one of the new things that has come out since the last meeting. There are several other things, rather unimportant, which I will not mention this evening.

Dr. Lees: From your solutions do you have a precipitate of the actual bacilli?

Dr. Beebe: Yes, the organisms form a sediment in the bottom of the tube.

Dr. J. N. Gould: In the case of normal condition for a horse, what is that precipitate composed of when agglutination is at 200? There are no germs there.

Dr. Beebe: This suspension we prepare contains the germs. We take a culture of glanders and put in incubator for 48 hours and then scrape the growth off and put it into a small amount of carbolic solution, and then put this in the thermostat; that is an apparatus so arranged that it can be heated to 65° for two hours. Organisms are killed and then this is diluted with normal salt solution that contains .5 per cent. of carbolic acid until it is just faintly cloudy, and to this add the serum. In every case you would have the bacilli. You make several different dilutions.

REPORT ON LEGISLATION.

Dr. Gould: A report on this subject at each meeting is not of much value. The material is not sufficient to make a report. I do not know that we should have a report called for at every meeting. The field was gone over pretty thoroughly in July, and that does not leave anything to report at this time in particular. However, I wrote to all the other members of the committee and received two replies. One of the gentlemen could not suggest anything, and Dr. Cotton suggested that we ought to have some legislation along the lines of revoking the license of certain men who failed to report contagious diseases, and particularly glanders. I think I had a reply also from Dr. Lees, and he suggested that it was rather unadvisable to ask for any change in legislation at this time. I think as far as the Association is concerned, that it would be rather of doubtful benefit. I think that Dr. Reynolds, in his report to the Association, will bring out a few points that will be interesting along this line.

REPORT ON EMPIRICS.

Dr. Ward: In our work with glanders we find in a great many cases where we have had outbreaks of a disease, that the cases have been treated by what we know as licensed practitioners, men who are granted certificates entitling them to practice under the law of 1893. I have thought and suggested to some of the members that it might be a good idea if we could get some legislation along this line that would tend to put these people out of business. In one outbreak, which I think Dr. McDonald investigated last year, a man had lost in the neigh-

borhood of 30 horses from glanders. We found on visiting the owner that he had employed a licensed practitioner and had paid out in the neighborhood of \$300 that winter and had lost 20 horses and had a number of others showing symptoms of glanders. I presume the loss to this man was close to \$4000. It was suggested by the owner to this practitioner that probably the outbreak was glanders. The man who was treating them did not consider that it was, and assured the owner that it was distemper, that the animals would recover; but in spite of it they died. In another outbreak in Norman County, 16 horses were affected. A licensed practitioner had been treating those. In the original case taken to him by the owner he was asked if the trouble was not glanders. The practitioner told him no; there was no danger, and put the horse with the others; there was nothing wrong, etc. When we found the outbreak the man had lost a number of horses and had 16 or so that reacted to the test. We have experienced this same thing in quite a number of cases. In all cases those animals have been treated by these licensed practitioners. I suggest this: that some legislation be introduced making it compulsory, starting out by saying that veterinarians and local health officers should report glanders, and any man found treating a case of glanders should be deemed guilty of a misdemeanor. If a licensed practitioner treated such cases his license should be revoked and prohibited from practicing in the state. This would do away with those people, and they treat those cases for what they can get out of them. In many cases they are not capable of diagnosing glanders, and such class of people should not be allowed to practice. They are a menace to owners and everybody they come in contact with. There is not the least danger of a bill of that nature affecting the graduate veterinarian. There is not a graduate veterinarian who cannot recognize the disease. If he is in doubt he knows where he can get mallein. We could not afford to give quacks mallein because they would abuse it, and if they did use it they might tell the owner to get the horse away as quickly as he could. The bill would have no effect except on licensed practitioners. It would prevent many outbreaks of glanders that we have. It would be better for the profession in the long run.

Dr. Cotton: I would like to hear from Dr. Leech on this.

Dr. Leech: In Dr. Ward's remarks he practically covered what I suggested last summer, or my suggestion would cover the remarks that Dr. Ward made. I said I thought it a wise

thing to do to regulate veterinary practice in Minnesota, or to tack an amendment to the original law making it obligatory for every practitioner to take out an annual certificate from the Board of Examiners, having to renew every year the same as the druggists or other professions over the state, and by actual payment of one or two dollars, such a thing would be possible, and no one ought to make objection to that sort of law or such legislation. By doing so then the profession all over the state, through the Examining Board, has power to control not only licensed men but graduates. I believe there are times when graduates require some regulation as well as licentiates. I do not believe we are all perfect. I believe we are all human, and humanity is liable to err and I think it is wise legislation, but Dr. Gould thought it would be opening up the old law and defeating legislation. I believe it would be the best thing and most feasible way of controlling such practices, and believe that by the payment of these annual fees it would be a fund kept in the hands of the Examining Board to take care of needed legislation as well as other matters of expense which might come in the way of necessary legislation by the Examining Board, and by the profession throughout the state supporting it with that fund it would be all utilized for the benefit of the profession.

APPLICATIONS FOR MEMBERSHIP.

Secretary Mack then read the following applications:

J. Butters, Renville, Minn. (Ont., '94); vouchers, M. S. Whitcomb and M. F. Leffingwell.

Chas. B. Parker, Monticello, Minn. (Chicago Vet. College, '06); vouchers, M. H. Reynolds and S. H. Ward.

A. E. Hoffman, Rushford, Minn. (Kansas City Vet. Col., '06); vouchers, M. S. Whitcomb and M. F. Leffingwell.

F. E. Perkins, Ellsworth, Wis. (Chicago Vet. College, '02); vouchers, A. F. Lees and C. A. Mack.

Dr. Ward: I notice that one application is from a town outside the state. I would like to know if he has taken an examination. I understand the by-laws require that members shall be duly licensed practitioners.

Dr. McGillivray: We acted on one this afternoon under similar conditions, under suspension of the rules. We would have to take the same procedure in this case.

Dr. Lees: I make a motion that we suspend the rules and elect Dr. Perkins, of Ellsworth.

Upon a vote being taken Dr. Perkins was elected a member.

It was moved and seconded that the remainder of the applications be taken up collectively and the Secretary cast the ballot, which was done.

REPORT ON TETANUS.

Dr. Eckles: The subject of my paper is "Tetanus." On Aug. 27, 1905, I was called to see a four-year-old mare suffering from tetanus. The owner said she had been suffering for five days. I examined her front feet and found a small shingle nail. I removed the nail and put on a poultice of oil meal on the foot affected. In the poultice I put 43 per cent. carbolic acid. I, like most veterinarians, have tried every treatment heard of in other cases of tetanus. I have tried tetanus antitoxin with no favorable results. In this case I decided to try salol, and put two ounces in a pail of water, but she would not touch the water, so I made a solution of salol and sweet oil, 1 : 4. I injected one ounce of this mixture every six hours, hypodermically, in the side of the neck. At the same time I put a little salol in the drinking water. I commenced with one ounce morning and evening and increased the salol in the water and dropped off with the hypodermic injections. The first three days I saw no improvement, but on the sixth day I observed a slight improvement, and increased the salol in the drinking water until I was giving her 3 ijss during the 24 hours. After about seven days from my first visit, the dorsal and masseter muscles began to soften. I then moved her into a loose, roomy box stall. She improved very fast from Sept. 5, and I still gave her salol in drinking water, about 3 ij in the 24 hours, and saw her on Sept. 8. She was improving very fast. On Sept. 16, the owner moved her 11 miles, unknown to me, and on Sept. 17 I was called to see the mare on the new farm, and she was almost as bad as when I first saw her. I increased the salol until she was taking 3 ijss during the 24 hours in her drinking water. On Sept. 23, I saw her again, and she had almost entirely recovered. She seemed as well as ever, only when moved she seemed stiff on first starting off. On Oct. 10, the owner turned her out in the yard and left her there, except at night. I will say that all cases treated with salol do not yield to treatment as readily as this particular one, but I find I have more recoveries under the salol treatment than any other treatment. I will state that I had a case of tetanus and tried tetanus antitoxin. I got two bottles and gave half a bottle in the morning and half in the evening and there was no improvement, and sent for two more bottles, and next morning gave the other bottle, etc., and I did that

until I used \$12 worth and got no improvement. Perhaps I overdosed the horse, but made up my mind that I was going to give it a good trial.

Dr. Cotton: I would like to ask if any of the members ever had experience with the use of diphtheria antitoxin in tetanus. A year ago last August at the Cleveland meeting Dr. Quitman, of Chicago, mentioned it, and used it in a few cases with results. I was talking with a gentleman who returned from Rock Island, Ill., a few days ago, and he said he met a practitioner there who was having a great deal of tetanus this year, and this month was having good results with diphtheria antitoxin. The one who told me was a veterinarian, and said he was very enthusiastic, and had five cases of tetanus in his stable at that time that were convalescent. I have never used it. As far as tetanus antitoxin is concerned, Dr. Eckles certainly did not use it in excess. If you expect to get any results from tetanus, you must use it in immense quantities. I was very enthusiastic over it some years ago, and had a number of cases which would have recovered without medicine. We all have those cases where the history is that the animal is getting stiff for probably four or five days, that is, it comes on slowly. Those animals recover themselves in the majority of cases without any treatment. In my experience it sometimes takes months for those muscles to relax. For months their hind limbs will be stiff. I do not think there is any question but what you hurry a complete recovery, but you must give it in large quantities. I have two cases in mind belonging to ice companies in Minneapolis, mild cases and both working inside of three weeks. I do not hesitate with those heavy horses to give them seven to nine bottles the first day, and six to eight the second, dropping one bottle each day until I get down to one bottle, and then stopping; and a case of tetanus that will live for nine days will get well. I think if an animal has tetanus and stays up for nine days you are almost justified in giving a favorable prognosis. I would like to hear from Dr. Beebe regarding diphtheria antitoxin.

Dr. Beebe: I heard Dr. Thomas state at the Cleveland meeting that several years ago at Hartford they had several horses highly immunized to diphtheria that became affected with tetanus and all died just as quickly as other animals. I would also like to state in regard to tetanus antitoxin, I think you will find that you observe the best benefits if used early because the antitoxin and tetanus unite with nervous matter very rapidly, that is the union between toxin and nervous system. The the-

ory is that toxin travels along the nerve trunks and unites with the nerve matter, that it is impossible to break union down between them after once taken place. In order to have antitoxin efficient it must be given very early.

Dr. Ward: I would like to ask Dr. Eckles if he puts salol in water.

Dr. Eckles: I mix salol in a bottle so owner would not know what I was giving. I mix it with water. At first the horse would not take it at all.

Dr. Beebe: I would like to ask Dr. Eckles if he has ever tried carbolic acid.

Dr. Eckles: No, I never have.

Dr. Beebe: Do you think that the carbolic acid in salol is what produces the beneficial results?

Dr. Annand: I would like to ask Dr. J. N. Gould if he has had any recent experience with tetanus.

Dr. Eckles: I would state that it was through Dr. Gould that I got my idea of using salol.

Dr. Gould: I have not had any cases favorable to treatment. All I have seen were nearly dead. I saw a case of tetanus this fall that showed the first symptoms of tetanus during the day and I was called during the evening about ten o'clock. The horse was down and was dead the next morning. The germ gained entrance on the top of the neck. I do not know whether that has any influence in hastening the disease or not, as rabies does. This case seemed to be very rapid, the most rapid I ever saw. I notice those cases which occur from nail pricks, most of them are slow, and I have seen three where I thought the germ gained entrance along the back or neck and it was quite rapid.

Dr. McGillivray: If there are no other remarks on this paper, we will call on Dr. Reynolds for his paper. (Dr. Reynolds' report was upon the subject of the State Examining Board, and was quite exhaustive. It showed the very efficient manner in which its affairs were being administered, and the benefits being derived by the profession through its operation).

Dr. McGillivray: If there is no discussion on this there is a communication from the Mayor of Mankato which the Secretary will read. Dr. Mack then read a letter extending a cordial invitation from the Commercial Club to hold its meeting at Mankato next summer. He also read a letter from the Mayor of Mankato requesting the Association to hold its meeting at Mankato this summer.

Dr. Ward: I move that we accept the invitation from Mankato and hold our semi-annual meeting at that city. Carried.

Dr. Reynolds: I would like to say that Dr. Tomlinson, of St. Peter, who was on the program and had promised an address, telephoned me to-day that he had been very unexpectedly detained at the hospital, and he regretted it very much and asked me to extend his regrets. He went on to say that if he could make amends by giving an address at some future meeting he would be very glad to do so.

Meeting adjourned.

A very interesting clinic was held at Dr. Cotton's infirmary, Jan. 10, consisting of several important operations.

C. A. MACK, *Secretary*.

VETERINARY MEDICAL ASSOCIATION OF NEW YORK CITY.

The May meeting was held in the lecture room of the New York-American Veterinary College on the evening of the 1st, with President Bell in the chair. Owing to the absence of Secretary W. Reid Blair, who was in the South, Dr. Charles E. Clayton was elected Secretary *pro tem*. The attendance was not as large as on the previous evenings during the past year, due solely to the fact that New York practitioners are greatly overworked from the epizootic of foot cases following the long severe winter. During March and April practice was very heavy and almost wholly surgical, necessitating the dressing of foot cases all day long, so that when evening arrived veterinarians were glad of the opportunity to get what rest they could secure before beginning another day of the same routine.

After the opening business had been disposed of the President introduced Dr. Clarence J. Marshall, of Philadelphia, who spoke extemporaneously upon the subject of "The Different Methods of Destroying Pet Animals." He described the method in use by the Society for the Prevention of Cruelty to Animals, which is the generation of carbon-monoxide gas, forcing large volumes of it into a cement tank in which a number of small animals are confined, causing their rapid insensibility and death; also the system of destroying large animals by the pollaxe. While these methods were excellent in the hands of such an organization, he thought the veterinarian should have a more scientific or a different way of accomplishing the result; they were expected to adopt the most humane and rapid means of terminating life, with the least suffering. He spoke of the

well-directed pistol-ball as being as near instantaneous as any other means, but the instrument must be in the hand of an expert; and, besides, the veterinarian often encounters conditions where it is undesirable to cause the report of a gun; in the case of destroying animals suffering from contagious diseases the noise caused by the discharge of a pistol may be objectionable by attracting undue notice and the collection of a crowd of curious neighbors. For these reasons, then, some rapid method of poisoning horses is desirable. The saturated solution of cyanide of potassium injected into the jugular vein he deemed a good way of rapidly terminating life, but it requires a large amount of solution, and occasionally the death struggle is prolonged. It is difficult to pulverize the salt, and it is dangerous to handle. The ideal method is a solution of ten grains of strychnine given intravenously, which never fails to kill, and usually produces death in five to ten seconds. The principal objection is the difficulty in obtaining a solution unless by the use of a large quantity of water, which makes the method a little awkward. In the discussion which followed Dr. Marshall's excellent talk, Dr. Carlisle N. Darke, of New York City, said he had experienced the same trouble encountered by Dr. Marshall, but fortunately he had been able to overcome it. He now uses one dram of 36 per cent. acetic acid and one dram of water, and in this strychnine is readily soluble and will remain in solution. Twenty grains will easily dissolve in this quantity of fluid, making a very small injection. He uses this means entirely, and has never seen a failure. Other veterinarians detailed the means employed by them, mostly the pistol or the cyanide solution; but the general impression was that strychnine dissolved in the acetous mixture was the best.

Dr. Marshall related a peculiar experience which he has had with osteoporosis. On a certain farm near Philadelphia, where a large number of pleasure horses are cared for, there has never been an unusual number of cases of bighead until lately. About a year ago the farm changed management, and under the new *régime* wheat bran and hay were exclusively fed, the former very generously. Soon a case of osteoporosis in a seasoned horse was observed, and it was followed in rapid succession by others until there were at least thirty animals affected. His recital of this instance was for the purpose of obtaining the opinions of the members as to the relation between the ration used and the apparition of the disease. There was little to be gained, however, as each one could relate instances which

would release bran from any suspicion, and each could tell of its appearance under the most varied and contradictory circumstances. Dr. Bowers told of a certain farm where the water contained some mineral, which colored white fabrics to such a degree that it was impossible to do the family washing in it. Cases of osteoporosis turned out on this farm recovered. He promised to have the water analyzed. Almost every one contributed to the discussion, and Dr. Marshall received a hearty vote of thanks for his kindness in coming from Philadelphia to address the meeting.

Dr. Charles E. Clayton contributed a valuable report on a case of "Rabies in a Horse," which he was called to see on March 10. The animal was furious, and gnawed the flesh from his forward extremities. Before the veterinarian was called in the horse bit his two mates upon the neck—he was the centre horse of a three-abreast team. When Dr. Clayton had diagnosed the disease he had the horse shot, and placed the two injured animals under the inoculation treatment. The brain of the dead horse was sent to the Health Department for examination, but the Negri bodies were not found. Inoculation of some of the medulla into guinea-pigs reproduced the disease, and the Negri bodies were found in profusion in all of them. The horses which had been bitten did not develop rabies, and are now back into their accustomed work.

Dr. Ray W. Gannett, of Brooklyn, was to have presented a paper on the subject of "Resection of the Flexor Pedis Perforans Tendon for Infected Navicular Bursa," but at the time of the meeting the Doctor was in a contagious tent at Bellevue, where he had been conveyed about a week previously under the supposition that he was suffering from acute glanders. Dr. Gannett is one of the most promising veterinarians of this country, and the distressing news of his affliction had cast a gloom over the entire Metropolitan profession. Dr. Silkman, of the New York Board of Health (who, by the way, read a paper on the subject of "Glanders in Man" at the March meeting, which is published in this number of the REVIEW), who had made a close study of Dr. Gannett's disease, was called upon by the President, and he stated that he had just left the patient, and was glad to state that he was not a victim of glanders; that his blood had failed to agglutinate, that no bacilli of glanders had been found, but many streptococci were present in the pus from the ulcers. Since then Dr. Gannett has been discharged and has resumed his work in Dr. Geo. H. Berns' infirmary. Paul

Schmidt, of Park Avenue, New York, one of the promoters of a patent fraud known as "glanderine," who attempted to get control of Dr. Gannett's case under the pretext of curing his "glanders," has been landed in jail by the New York Medical Society, and it is to be hoped that he will be either kept there or forced to flee the country.

Dr. W. Reid Blair, who was to have presented the results of seven post-mortems on horses reacting to the agglutination method, was absent from the city, but sent down a paper on "Sarcomata," accompanied by specimens from a red fox which had died at the Zoo. The description was particularly lucid, giving a pointer as to the gross appearance of such growths, so that their nature may be suspected before the microscopical examination. He also forwarded specimens from a case of generalized tuberculosis in a cat.

The President announced that the June meeting would be given over entirely to a discussion of the subject of educational conditions of the state and the law governing the practice of veterinary medicine. It is expected that a number of prominent veterinarians from other states will be present to contribute their experience and advice, among whom are Dr. W. Horace Hoskins and C. J. Marshall, of Pennsylvania; Dr. Wm. Herbert Lowe, of New Jersey; Dr. Richard P. Lyman, of Connecticut; Dr. W. L. Williams, President of the New York State Society, and others.

(R. R. B.)

KEYSTONE VETERINARY MEDICAL ASSOCIATION.

The regular meeting was held in Donaldson's Hall, Broad and Filbert streets, Philadelphia, on Tuesday, May 14th, Dr. B. M. Underhill, President, occupying the chair. The following members responded to roll-call:—Drs. C. J. Marshall, W. Horace Hoskins, W. H. Ridge, J. W. Vansant, W. L. Rhoads, B. Kirby, F. H. Schnider, G. S. Fuller, H. G. Black. Visitors—Dr. Noack, of Reading, Pa., Drs. S. J. J. Harger, John Reichel, and H. D. Martein. The minutes of the April meeting were read and approved. Dr. John Reichel was regularly admitted to membership, and Dr. S. J. J. Harger was reinstated.

Dr. John Reichel read his paper upon the "Agglutination Test for Glanders." He very plainly showed to the members the value of this test, particularly in conjunction with the mallein test. Quite an extended discussion followed, which was entered into largely by Drs. Noack, Harger, Ridge, Fuller, and others.

Dr. S. J. J. Harger spoke upon his experience with mallein, which experience has been very extensive lately. He described in his lucid way the local symptoms, the temperature changes and constitutional symptoms which are seen after the injection of mallein. In the discussion which followed nearly all those present took part.

Dr. Martein exhibited an Irish terrier which had had the hard palate punctured by a bone, with the result of an opening nearly an inch square remaining, which interfered with deglutition. Dr. Martein had very ingeniously closed the opening with a silver plate, and, as the plate has been in position over six months, with no bad results, the operation seems highly successful.

The meeting adjourned at 11.30 P. M., after having spent a very profitable evening. A. W. ORMISTON, *Secretary*.

BETA CHAPTER OF ALPHA PSI FRATERNITY.

The Beta Chapter of the Alpha Psi Fraternity was formally installed at the New York State Veterinary College, Cornell University, Ithaca, N. Y., on the evening of May 6. Mr. Arthur F. Schalk, of the National Council, had charge of the ceremonies. After the initiations all the members enjoyed a fraternal banquet at the Ithaca Hotel.

DO GOOD to your fellow-practitioner: Tell him about the AMERICAN VETERINARY REVIEW.

DR. A. K. DICKLE (Chicago V. C., '07) is assistant in the practice of Dr. S. E. Hershey, proprietor of the Charleston, (W. Va.) Veterinary Hospital.

THE ALPHA CHAPTER at the College of Veterinary Medicine, Ohio State University, granted honorary membership to Drs. S. E. Bennett, Paul Fischer, M. B. Lamb, Mark Francis, and several other alumni. It also extended honorary membership to Drs. Liantard, D. E. Salmon, Roscoe R. Bell, Robert W. Ellis, A. D. Melvin, W. H. Dalrymple and M. H. Reynolds.

SUGAR TO OVERCOME FATIGUE.—From France comes the news that remarkable results have been obtained by an army surgeon there from the use of sugar in overcoming fatigue in horses when overworked. About half a pound of sugar was mixed with the horses' food every day. Not only was fatigue overcome in forced marches, but horses until then useless because of their poor condition recovered normal strength and rendered good service.

NEWS AND ITEMS.

DR. M. T. BERNARD, Grand Island, Neb., recently sustained a fracture of the tibia, but is doing well.

DR. W. A. WOLCOTT, M. D. C., Plymouth, Wis., will soon lead to the altar Miss Alice E. Liese, of the same city.

DR. GUY A. ROBERTS, Raleigh, N. C., was married on the 15th ult., to Miss Emily Clara Steinmetz, of the same place.

DR. G. E. MCEVERS has been appointed Veterinary Surgeon to the Chicago Fire Department at an annual salary of \$2500.

A NEW EDITION of 250,000 copies of the "Special Report on the Diseases of the Horse" was authorized by Congress at its last session.

DR. FRED. C. CATER, who recently returned to the States after service in the Philippines, has joined the B. A. I., and is stationed at Southwest City, Mo., where he is engaged in Texas fever work.

DR. J. B. CAUGHEY, formerly of Columbiana, Ohio, but who is now of the B. A. I. force, is located at Pittsburg and Alleghany, Pa., and not at Cincinnati, Ohio, (as stated in the May REVIEW).

A LETTER from Dr. W. A. Hayes, of Jackson, Mich., under date of April 16, states that for three months rabies has been quite prevalent in that locality, and many dogs, cats, and other animals have been destroyed. Seven persons who had been bitten by dogs, took the Pasteur treatment at Ann Arbor.

JAMES CLARK, F. R. C. V. S., Examiner in Therapeutics and Toxicology, and late Examiner in Diseases of Cattle to the Royal College of Veterinary Surgeons, died at Coupar Angus, N. B., April 25. He was born in 1847, graduated at Edinburgh in 1868, and obtained the Fellowship in 1887.

DR. ADOLPH EICHHORN, B. A. I., Washington, D. C., sailed for Europe on April 30, and after a short stay in Hungary with his relatives, was to proceed to do special work for the Bureau in Hungary, Austria, Germany and France. It is expected that he will return to the United States the early part of July.

THAT OUGHT TO SETTLE IT.—Manager Perry, of the American Car Sprinkling Company of Worcester, will be here Monday evening to arrange the details of his sprinkling contract. It was so dusty on Main street this afternoon that some of the business men sprinkled the street in front of their places with a horse.—(*New Britain, Conn., Herald.*)

THE resolution to pasteurize the milk supply of New York City, was lost before the Board of Aldermen on May 21, by a vote of 29 to 20. Alderman Everson, of Brooklyn, himself a physician, in speaking against the resolution, said that the way to get pure milk was to inspect the cows at the dairy farms and to require cleanliness there.

DR. W. REID BLAIR, Pathologist to New York Zoölogical Park, has been sojourning in Virginia, for the past month, his physician having peremptorily ordered him to relinquish work for a time, and seek rest and diversion among the pine forests of the Old Dominion. Dr. Blair is an incessant worker, and his ambition has gotten the better of his judgment.

DR. A. C. KNAPP, of Bridgeport, Conn., had an exciting experience a few weeks ago with a rabid dog in a street of that city. The animal had a considerable portion of the population at bay, when the veterinarian arrived upon the scene. He made a lasso and dexterously encircled its neck, afterwards confining it under a wooden box and destroying it with chloroform.

DR. A. T. KINSLEY, professor of pathology and bacteriology at the Kansas City Veterinary College, made an extended trip during May, visiting most of the colleges of the country in quest of information as to how his subjects are dealt with by other teachers, with the object of bringing his own course up to the hour and omitting nothing which would be of benefit to his students. He made a pleasant call upon the REVIEW about the middle of May.

THE last Kansas Legislature appropriated \$80,000 for a building for the Veterinary Department of the State Agricultural College at Manhattan. The college has an abundance of good building stone on the college farm and with labor at a comparatively low rate this appropriation will provide a magnificent structure. This is another instance showing that veterinary knowledge is being more fully appreciated as an economic factor in agriculture.

PROF. L. VAN ES, of the North Dakota Agricultural College, Veterinary Department, is at present in the city of The Hague, Holland, where he is taking a special course at the Government Serum Institute there. He left the United States April 1 with his little son, and expects to visit and attend lectures (not the Peace Conference) at The Hague Institute, as well as at the veterinary schools of Amsterdam, Berlin, Dresden, Vienna, Budapest, and Paris. He expects to return early in the fall to resume his professional duties at Fargo.

THE KANSAS CITY VETERINARY COLLEGE has doubled its ground holdings and is planning the erection of other college buildings. The management is determined to provide every facility for preparing its graduates to meet the ever-widening requirements of the veterinarian. Among the structures to be erected will be a pavilion for giving instruction in the judging of live-stock, and the practical study of the breeds of animals, etc.

DR. RAY W. GANNETT, house surgeon of the infirmary of Dr. George H. Berns, Brooklyn, N. Y., who suffered a serious attack of blood-poisoning (thought for a time to be acute glanders, and for which he was isolated in a contagious ward at Bellevue Hospital, New York City), has apparently recovered and has resumed his duties in Brooklyn. Many large ulcers of the hands were removed by excision. Dr. Gannett is a graduate of the New York State Veterinary College, class of 1905, and has a brilliant future as a surgeon.

A V. S. UNDER A SERIOUS CHARGE.—*Dayton, Ohio, April 24.*—Dr. A. V. Mann, the veterinary surgeon who was arrested by Fire Marshal Ambrose on a charge of burning his stable, was released to-day on bond. His attorneys, Bickley & Bickley, issued a statement for him, in which he claims that the charges are false, and that he will prove his innocence. Dr. Mann's parents are prominent and wealthy, and will make a determined effort to clear their son of the charge brought against him.—(*Cincinnati Enquirer.*)

DR. W. H. DALRYMPLE, of the Louisiana State Agricultural College and Experiment Station, read an extensive paper on "The Importance of Meat and Milk Inspection" before the Second Annual Conference of Officers of Health under the auspices of the Louisiana State Board of Health, at Opelousas, May 2-4. His paper was illustrated by stereopticon slides, showing some of the organisms which are commonly carried by these important articles of food, such as cysticerci, trichinæ, tubercles, bacteria of different kinds, etc. Dr. Dalrymple was also selected to open the discussion on an important paper on "Serums and Antitoxins." Through such channels the veterinary profession is lifted into higher spheres in public opinion.

THE KANSAS PRACTICE LAW.—As previously announced in the REVIEW, Kansas veterinarians were successful before the last session of the Legislature in securing the passage of a law to regulate the practice of veterinary medicine in that state. This law went into effect on March 2, and to carry out its pro-

visions the Governor has appointed* the following gentlemen to constitute the Board of Examiners: President, Dr. Hugh S. Maxwell, of Salina; Secretary, Dr. D. O. Knisley, of Topeka, and Dr. T. W. Hadley, of Kansas City. The struggle to secure this law dates back over four years, and final success was due to the persistency of only a few of the members of the profession, chief among whom was the energetic Secretary of the State Association, Dr. Maxwell, who fought on when others abandoned the struggle as hopeless. It is amazing what can be accomplished by so few workers when there is faith in the cause and confidence in ultimate success.

THE MINNESOTA LAW STRENGTHENED.—Minnesota veterinarians have secured the passage of a new veterinary practice act, practically as asked for, and now claim to have as good as the best. The more important new features of the revision are as follows: One appointment to the Examining Board each year, instead of all members changing at the same time. Date of the examination is changed to the Tuesday preceding the second Wednesday of January and July. In the matter of colleges whose graduates are eligible to examination, the word "reputable" is inserted, giving the Board discretionary power. All certificates are hereafter subject to annual renewal, provision being made for renewal of all certificates on or before May 1 of each year. The Board is given authority to revoke or refuse renewal for gross moral or professional misconduct. Certificates are now to be recorded in the county or counties where a man practices, instead of in the county where he resides. It is not necessary to record annual renewals. Prosecution may now be either civil or criminal, and penalty either fine or imprisonment.

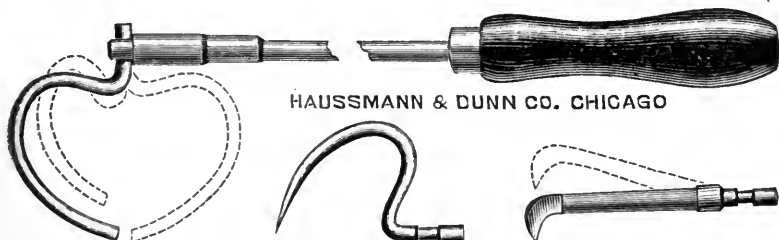
PROFESSOR KITT RETIRED.—The news from Munich reporting the resignation and retirement of Prof. Kitt will be deeply regretted by the veterinary profession. Prof. Kitt held the chairs of pathological anatomy, general pathology and infectious diseases in the Veterinary High School of Munich. He was engaged for 27 years as teacher and investigator and is still in his best years of active life. His extensive literary contributions of the last years indicated that considerable work was yet to be expected from his active mind. All who know his text-books, his works on pathological anatomy and bacteriology, will certainly regret his retirement from his active field, which assured him a lasting admiration from the medical professions. His works are distributed all over the world, many

being translated into different languages. His scientific activity received many recognitions; among the numerous distinctions he also received the honorary doctor degree from the University of Munich. The cause for his request for retirement is said to be a declining of his eyesight, which naturally would hinder him in the work of his special branches of medicine.—[*A. E.*]

FOR A NEW BREED OF COACH HORSES.—President Roosevelt's administration is likely to be long remembered by breeders and all interested in the improvement of American carriage horses for the steps which have been taken through the Department of Agriculture at Washington to foster the native trotting bred coacher. Following up the commendable enterprise of establishing a government stud at the Colorado experiment station, the department is now working out a project which promises to be of even greater and more far reaching importance to horse breeding interests. In coöperation with the American Association of Trotting Horse Breeders it is proposed to institute at state and national fairs throughout the country a series of show ring competitions which will give to native breeding stock of the heavy harness type the same recognition now accorded to coach horses of the various foreign breeds. Uniform classes, governed by conditions either drafted or approved by the Bureau of Animal Industry, will be arranged for stallions, mares and colts of the fashionable carriage type at all the leading fairs in the horse breeding sections. When these classes once become established at the big exhibitions it is believed that district, county and minor fair associations will quickly follow the lead in adopting this classification for their prize lists, and thus make it almost universal throughout the United States. The plan prepared by George M. Rommel, of the Bureau of Animal Industry, is broad in its scope, and so drawn up that horses of American blood, whether standard trotters, Morgans, or saddle bred horses, will be eligible to compete. The purpose is to establish or evolve a uniform type or breed of American carriage horses, and in laying the foundation the department proposes to throw the doors wide open to these three closely related native families and let the best individuals win. Competing under uniform conditions in all show rings, it is believed that horses fairly uniform in make and shape will be selected as the prize winners, and that the continued mating of these winners will, in a comparatively short time, result in fixing the type and establishing the new breed.—(*New York Herald.*)

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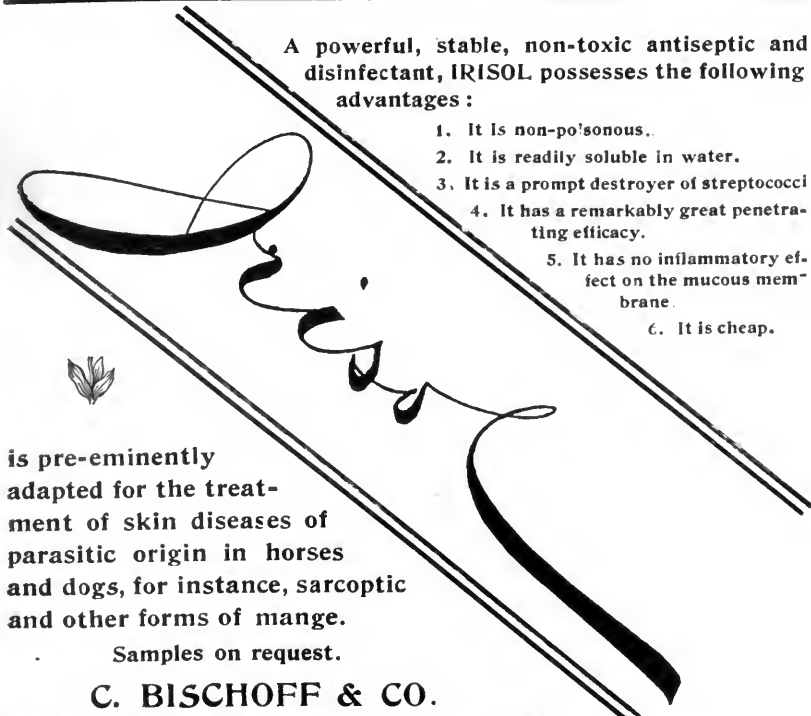
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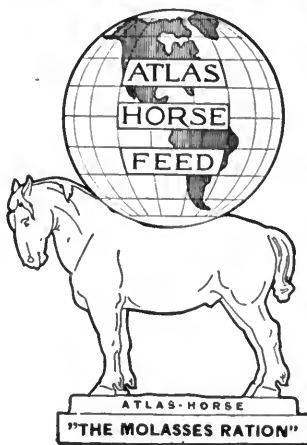
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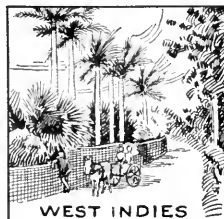
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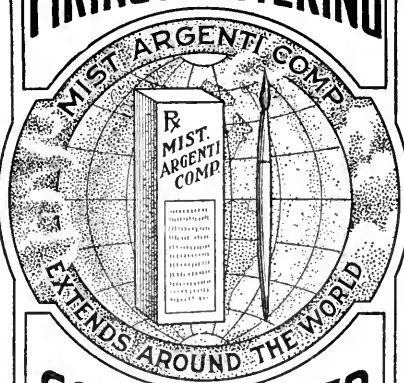
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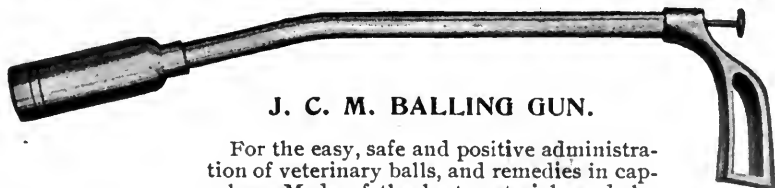
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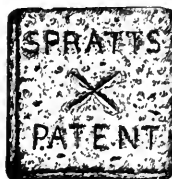
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AMERICAN VETERINARY REVIEW.

JULY, 1907.

EDITORIAL.

EUROPEAN CHRONICLES.

PARIS, FRANCE, May 15, 1907.

MODES OF TUBERCULAR INFECTION.—It is not always that members of our sister profession, the human, are willing to acknowledge the help that, in their researches and discoveries, they have received at the hands of veterinarians; and on that account when one, and certainly one of the most prominent, does make such acknowledgment, the entire veterinary profession must bow with pleasure and pride. Dr. A. Calmette, the worthy director of the Pasteur Institute at Lille, who is a corresponding member of the Institute of France and of the Academy of Medicine of Paris, in an address which he delivered before a society of veterinarians, opened his remarks by saying: "If bacteriologists ever succeed in giving to humanity an efficacious method of vaccination against such a terrible scourge as tuberculosis, it will be due to their close and continued collaboration with veterinarians." The subject of the conference of Dr. Calmette was on the channels through which tubercular bacilli enter the organism and on the actual knowledge relating to antituberculous vaccination of bovines. After giving full recognition to the work done by veterinarians, Dr. Calmette passed to a brief history of tuberculosis: the general opinion that prevailed about its contagiousity among veterinarians and physicians, the affirmation of the duality of human and animal tuberculosis as expressed by Koch at the Congress of London in 1901, the series of experiments that were started in the Old and in the New World by Chauveau, Nocard, Thomassen, Bang,

Arloing, Ravenel, de Schweinitz and others, and finally the demonstrated evidence that there was *but one* tuberculosis of mammalia, but that the bacilli of bovine and man constituted only two distinct breeds of a same species, and that these breeds were created by the progressive adaptation to different organisms.

* * *

It is evident that this fact once established, a great step was made; but others remained, which were as essential to be solved. Among them, one has a great importance to the point of view of the measures that will be required in the prophylaxy of the disease, and that is the knowledge of the manner by which ordinarily tuberculous infection does occur, from animal to animal and from man to man; in other words, by what channel the virus is introduced into the tissues of an animal previously indemn. In human medicine, the majority of clinicians admit that, most generally, infection takes place by the dust carrying bacilli with the air taken into the lungs by inspiration. Since the experiments of Chauveau in 1868, veterinarians have had a tendency to incriminate, on the contrary, the contamination by the digestive tract. Of course, no one denies that in some cases, through preëxisting lesions of the skin, of the pharynx, of the larynx, or even the genital mucous membrane, the introduction of the virus could take place. But no one, among either veterinarians or physicians, has dared to say that pulmonary tuberculosis, *primitive* so called, or the characteristic tumefaction of the tracheo-bronchi or mediastinal glands, without pulmonary lesions, could be of intestinal origin. It is true that Behring had said that it might be possible for pulmonary tuberculosis of adults to be only a late manifestation of an intestinal infection contracted in youth. But, then, of what value were the experiments made previously, and especially those of Melun?

The question was still open, and it was then that Calmette and his assistant, Mr. Guérin, undertook their experiments, which showed them that: Pulmonary tuberculosis is not the

result of a slow evolution of intestinal infection contracted in youth ; that at any time of their life animals can take tuberculosis by the intestines ; that most generally with adults the tubercular infection of intestinal origin localized itself immediately to the lungs, while in young animals it remains for a time, more or less long, located in the mesenteric glands ; that it is extremely difficult and even often impossible to realize experimental direct infection of the respiratory tracts, and therefore that it cannot be admitted that contagion by this channel is predominant ; and, finally, that *in the normal condition of natural infection, the digestive canal is the principal door of entrance of tuberculosis.*

* *

The second part of the conference related to the various methods of vaccination which have been more or less extensively experimented with, the author considering the Behring bovovaccine method and suggesting the possibility of a vaccination through the intestinal tract ; he made the statement that young or adult bovines, which have taken per mouth a small quantity of bacilli, attenuated or modified by heat, did support afterwards with impunity the ingestion of surely fatal doses of virulent bacilli. Time, however, is necessary to bring those experiments to final conclusion. Let us wait !

* *

However, while the knowledge of the channels through which tuberculous infection can take place is an important item in the prophylaxy of the disease, that of the infecting condition of the agents that may enter those channels is also interesting. It is in that direction that Prof. Cadéac, of Lyon, has carried out his recent researches, which are related in the *Journal of Zoötechnie* for February, 1907. There is not a single experimental fact proving the transmission of tuberculosis by the inhalation of dust coming from localities infected with the expectoration of tuberculous sputa. The respiratory channels are protected from the bacilli of dust because : First, pure dust, dried in obscurity, reaches but very seldom in sufficient massive

doses to transmit tuberculosis by inhalation ; second, dust from sputa dried by light is harmless ; third, dried sputa adhering to external surfaces form with mucine a kind of coating which prevents their floating in the atmospheric air ; fourth, dust of these sputa are certainly spread, divided earlier or later, crushed and mixed with others in such a manner that their virulency is reduced to nothing by desiccation or dispersion of the bacilli that may have remained virulent.

Therefore, theoretically and practically, dust is harmless for the respiratory tract. It is likewise for the digestive channel. A number of animals have been fed with dust from sputa, some with material which had dried in obscurity, and others with sputa dried by exposure to light in a laboratory. Out of nearly one hundred animals, only one presented at post-mortem a few granulations of very small size in the lungs and the liver. In all the others the result was negative.

Conclusions : Dust from the desiccation of tuberculous sputa can be considered as innocuous for both the digestive and the respiratory tracts, unless taken in very large doses. The Professor closes by saying : " The most terrific engines are harmless when sufficiently broken into pieces ; atoms are no longer of any account ; a cannon shot pulverized cannot kill a bird ; the bacillus of Koch, floating to all winds, is a tuberculous bacillus which does not tuberculize any more ! ! "

* * *

A TEST OF BOVOVACCINE BY THE ARGENTINE REPUBLIC.
—When the subject of tuberculosis is spoken of, one is bound to also hear of Bovovaccine ! The following is then in order :

An important step in the treatment and prevention of tuberculosis of bovines has just been taken by the Government of the Argentine Republic. Desirous of making his country benefit by new discoveries relating to the treatment of tuberculosis, the Secretary of Agriculture at Buenos Ayres authorized Prof. Lignières, when he was in Europe, to make the following offer to all those interested in the question : " The Government of the Republic offers to place at the disposal of all scientific

persons having an efficacious remedy against tuberculosis, and at their expense, all bovines reproducers of great value which have been imported from Europe and which are to be slaughtered as having reacted to tuberculin."

These animals, which in the average have cost \$2,000, and some of which as high as \$8,000 and \$10,000, are in appearance in perfect health; they are receiving the best of care and their tuberculous lesions are generally very small. If a treatment is to be good and ought to succeed, it will be with such animals evidently better than it would be with old, broken-down cows, poorly fed and with extensive lesions.

From all the gentlemen whom Prof. Lignières approached, whether in France, Germany, Italy or Belgium, only one accepted the offer; it was Prof. von Behring!!!

At first he consented to undertake the curative treatment only, but on second thought he insisted to test the value of Bovovaccine also. A long and binding contract has been drawn and a program prepared by Prof. Lignières, and adopted by the German scientist.

We shall endeavor to keep our readers posted as the experiment goes on, but it will be some time before the positive results shall be known, as the experiment will take three years before being completed.

* * *

TREATMENT OF TETANUS.—I have come across in the *Journal de Médecine* a review of the treatment used in human medicine against tetanus and I have thought to make extract from it, as a subject of comparative therapeutics, although on account of the prophylactic treatment, which veterinarians are resorting to so much to-day, acute cases of the disease are not so frequent.

The treatment of tetanus has a tendency to benefit considerably the new orientation of therapeutics. Up to lately it was entirely symptomatic: the patient was relieved by reduction of the excitability of its nervous system. And it must be acknowledged that this method has often given very satisfactory results,

and even in our day it is put in practice with what modern knowledge has suggested to us.

Therefore, let us examine the generalities of several of the methods in vogue: (1) The symptomatic treatment, the oldest, but still resorted to; (2) the serotherapeutic treatment, only in its infancy; (3) the Bacelli treatment, and (4) that of Jaboulay.

(1). *Symptomatic Treatment*.—It must be applied as soon as the first signs of the disease are manifested. At any price, the excitability of the nervous system must be reduced, and all causes likely to stimulate it be removed. The individual shall be placed in a dark room; no unnecessary motion will be allowed; no noise must annoy him. By this quietness paroxysms may be prevented. The heroic drug to give then is chloral, in large doses. When given per mouth, it must be with plenty of water to avoid irritation of the stomach. Intravenous injections succeed no better than ingestion. Injections of morphine will increase the soporific action of the chloral.

* * *

(2). *Serotherapeutic Treatment*.—The discovery of the antitetanic serum is due to Behring and Kitasato. In 1890 these authors were working at the same time on diphtheria and tetanus. That was the beginning of the antitoxic sera. But if the value of the antidiphtheric serum was soon established, the same was not for the antitetanic serum. In 1893 Roux and Vaillard made known its true properties. Injected before the toxine, it prevents the production of tetanus. Injected at the same time or in the first hours following, it transforms a generalized tetanus into a local trouble. But injected at the end of the period of incubation or after the apparition of the contractions, it is absolutely useless. Since that epoch the question has not advanced one step. Intracerebral or subarachnoidian injections have been tried, but all the cases of recovery confirmed by serotherapy are subject to criticism. None is known that is not liable to be discussed.

It is now customary for surgeons to complete the dressing

of all wounds that have occurred in a suspected centre, such as a stable, a cow barn, a road where horse droppings are plentiful, with a preventive injection of antitetanic serum. The serum then must be very active and the injection renewed after two days, if the wound has a suspicious aspect.

For wounds less suspicious the serotherapeutic method has lately recommended the dry serum. Many surgeons complete their dressing with a careful dusting of powder of tetanic serum. This dried antitetanic serum in powder is well absorbed on the surface of the wounds and vaccinate against the microbe of Nicolaïer. This serum keeps well in a dry preservation and is not altered with the high temperatures of tropical climates. It is very practical for application in country surgery. Especially does it find its indication in cases where the presence and influence of horses exist.

* * *

(3). *Bacelli's Treatment*.—Professor Bacelli recommends the injection under the skin of carbolic acid in a 2 or 3 per cent. solution. These injections must be done several times a day until the end of the disease. Each of the injections at first contained gr. 0.03 and gr. 0.04 of phenic acid. But lately these doses were found too small and now they are raised to gr. 0.10 and even more, up to gr. 0.50, and even 1 gram. They are not only well supported, but are truly efficacious. (These are doses for human beings.)

By this treatment the author claims that out of 200 cases the mortality has been only 10 per cent., while by all the other forms of treatment it has been of 30 per cent.

(4). *The Treatment of Jaboulay* consists in the use of muriate of betaine. One recovery is on record by the subcutaneous injection of this salt at the dose of 1 gram. Such is the *résumé* of the condition of this important question. The amputation of infected surfaces or regions and the sections of nerves are also ignored as absolutely useless.

* * *

EFFECTS OF X-RAYS UPON THE GENITAL GLANDS.—I have

read in the *Presse Medicale* and the *Semaine Vétérinaire* of a new mode of castration. It will certainly never be admitted in the general practice of veterinarians, but it is nevertheless worth knowing in a scientific point of view. It is due to the action of X-rays on the genital glands, which, it seems, is altogether very peculiar in the fact that they give rise to a cellular degeneration, which involves only some of the constituting elements of those organs: method which acts only upon the sexual elements and respects all the others. In other words, it produces the progressive disparition of the cells of spermatogenetic and ovogenetic elements and does not touch those of the struma itself.

This observation is relatively recent. It was towards the end of the year 1903 that the first researches of the action of the X-rays upon the testicle were studied by Albert Schonberg, and it was in 1905 that Halberstaedter published the first work relating to the ovary submitted to the same experiment. The results of the experiments have since been confirmed for the testicle and also for the ovary. Indeed, it results from those experiments that the X-rays destroy in the male the fecundating power and in the female the possibility of being fecundated. These subjects have given rise to much discussion among scientific organizations. In males, the application of the X-rays upon the testicles has for result only the loss of the fecundating power, while in the female, on the contrary, the application of the X-rays upon the genital glands is followed by all the signs accompanying castration.

* * *

Let us examine facts which show why this difference does exist. Males that have received X-rays on their testicles lose their fecundating power, but, contrary to those that have been castrated, they conserve their genital activity. Rabbits and guinea-pigs thus treated by Schonberg have been unable to fecundate, but they would frequently cover females—at least mount them. The same was observed by Villemin. The results observed in man are absolutely identical. Numerous ob-

servations exist of radiographs that have become sterile, and yet had no diminution in their genesic power. Sick individuals submitted to the rays with a therapeutic object have become sterile without any other modifications of their sexual glands. Males that have been submitted to the X-rays have no atrophy of the genital tract (penis, vesicula seminalis, prostate, Cowper's glands), which is contrary to that which is observed in castrated males. Villemin has observed that, instead of an atrophy, the genital tract would remain as well developed in animals experimented upon as in the witnesses. Therefore, the sexual characters and the genital activity are not influenced by the lesions created in the testicles by exposition to the X-rays, whether in man or in animals. This is easily explained by remembering that the testicle is not constituted only by the seminal gland, but contains another—the interstitial gland, situated between the seminiferous canals: it is the gland of internal secretion of the testicle, and it is this that keeps under its control the sexual characters and the genital activity. As it is not destroyed by the X-rays and keeps all its morphological and functional integrity, it is natural that nothing abnormal should be observed towards the sexual characters or the genital activity of individuals having testicles that have stood X-ray exposure.

Although the action of the X-rays upon ovaries are not so well known, it is nevertheless well demonstrated that the oocytes and the follicles disappear from ovaries that have been exposed to the X-rays, and, besides, observation has shown that animals having such ovaries did not come in heat any more; that their genital tract would atrophy, that their clitoris would reduce—in other words, these animals would present all the transformations that are noticed in castrated animals.

* * *

To resume, the effects of the application of the X-rays are :

(1). A local action which is manifested as follows: For the testicle, disparition of the seminal gland and preservation of the interstitial gland. For the ovaries, disparition of both glands, sexual and internal.

(2). A repercussion upon the organism from the lesions produced by the X-rays upon the genital glands: In the testicle, loss of the fecundating power with preservation of the genital activity and of the sexual characters. In the ovaries, loss of the fecundity and apparition of all the signs following castration.

* * *

"PROCEEDINGS" OF THE A. V. M. A.—The "proceedings" of the 43d annual meeting of the American Veterinary Medical Association reached me some time ago. It was not because I took advantage of its arrival to send our readers some remarks on the State Boards of Veterinary Examiners, that I must neglect it and refuse it the honors that are due it. Its contents deserve more than the notice I gave of it last month, and I should fail in my duties by not calling attention to this excellent publication and to the work of its editor, C. J. Marshall, V. M. D., chairman of the Publication Committee.

The picture of President W. H. Lowe, which illustrates the book, is a good one, and I was very glad to receive it. It reminded me of the days when he was a student with me—now 20 years ago. How time flies!

Of course, next comes the ordinary lists of names of the officers of the Association, names of the members of the committees, of the Resident Secretaries; then the Constitution and By-laws, to be followed by the various addresses. After these come the many reports of the committees. They begin at page 35 and end on page 163.

The good information to be found in these reports it is impossible to review; it would take too much room. But the stock is immense; any one searching will find something of great interest in them. Besides what I have already recorded, I see a very interesting statement in one of them. I take it from the Resident Secretary of Illinois, Prof. L. A. Merillat. Indeed, at page 73, speaking of veterinary colleges, he said: "I know of instances wherein men have been granted diplomas without ever having attended school at all, of several men who

graduated after having attended only three months, and of many who have been so honored (?) with six months' work.

"If an applicant for admission has been a dentist, if he has attended a year at a medical college, or a dental or a pharmaceutical college, or if he can present any excuse whatever, he is admitted to advanced standing. . . ." Who would believe it? But I certainly endorse Prof. Merillat when he exclaims, further on: ". . . but I do believe that if this association had the courage of its convictions, the situation might be improved at once." Will the Association be brave and have the courage?

The report of the Committee on Intelligence and Education covers 40 pages of the book and its recommendations are of exceeding great value. No doubt they will be listened to and acted upon at the next meeting.

The papers and discussions of the meeting are all of great interest and their authors deserve many thanks for their efforts and for their work. The papers of Dr. C. H. Jewell on the "U. S. Army Veterinary Service" is unusually valuable, the notes on "Surgical Relief of Roaring" by Prof. W. L. Williams, the various articles on "Glanders," and those on its "Diagnosis," by Drs. V. A. Moore, W. J. Taylor, Ward Giltner, by G. H. Berns, by J. G. Rutherford, the article on "Tuberculosis of Swine" by Richard Ebbitt, the remarks on "Rabies" by Dr. A. Loir, all will be read with interest. I am sure that our friend W. H. Dalrymple with his article on "Our Insect Enemies" will occupy the attention of many readers and that the "Possible Dissemination of Tuberculosis Bacilli by Insects" by Dr. Samuel E. Weber, will certainly complete Dalrymple's communication.

Well, there are many other subjects which coöperate to make of this book a most valuable one. I only wish I could speak of all. The best thing for all veterinarians, whoever they are, is to get the work. Dr. Lyman will no doubt be very glad if the entire edition is gone by the next meeting. It ought to be!

THE "VETERINARY ENCYCLOPÆDIA" OF PROF. CADÉAC has just been enlarged by the addition of a new volume, entitled "Anatomie Pathologique et Practique des Autopsies" (Pathological Anatomy and Technic of Post-mortems). It is a book of nearly 500 pages, with 100 illustrations, sold by the house of J. B. Bailliere, the publishers of the entire Encyclopædia.

This volume has been written by Prof. V. Ball and Prof. C. Cadéac. The former has done the principal part of the work, having treated the part of the technic of the post-mortems and of the general pathological anatomy; the chapter on morbid processes, on the prophylaxy and curative treatment of diseases are considered by the latter.

The technic of post-mortems is comparatively short. It covers the manipulations demanded in the examination of all domestic animals—solipeds, large and small ruminants, dogs and cats, as well as birds. There is at the end a good guide for the redaction of a report on the autopsy.

The part that treats of the general pathological anatomy is also concise, of course in the spirit of an encyclopædia. But, nevertheless, the various degenerations, hyperplasia, hypertrophy, atrophy, are sufficiently considered and completed by the morbid processes, the inflammatory neoformations and the tumors.

The last portion of the book is occupied by the treatment of diseases, when the author has presented the general principles of prophylaxy, hygienic means, asepsy, antisepsy, vaccination, curative therapeutics, with the medication against causes, that of symptoms and lesions.

The publication continues and the field of its usefulness is constantly enlarging.

* * *

PAMPHLETS RECEIVED.—A few words now to complete my bibliographic notices.

I have on my desk quite a number of pamphlets sent to me, or which I owe a thankful acknowledgment.

The Bureau of Animal Industry comes in for a good share,

with the "Report of the Chief" for the year 1906, by Dr. A. D. Melvin, with Circular 101 relating to the new meat inspection law and its bearing upon the production and handling of meats, by G. P. McCabe, with Bulletin No. 93 upon the relation of tuberculous lesions and the mode of infection by Drs. E. C. Schroeder and W. E. Cotton, and finally with Circular 102 on the "Stomach Worms in Sheep" by B. H. Ransom.

I have received also the regulations relating to animal quarantine in Canada with ministerial orders, two Italian pamphlets by Dr. Antonio Pirocchi, one entitled "Il Late Scremato Nell' Alimentazione Dei Vitelli" (The alimentation of calves with skimmed milk), and the other "Altre Esperienze Sulla Durata Della Digestione Nei Bovini" (Upon the duration of digestion in bovines).

The January issue of the *Transvaal Agricultural Journal*, Bulletins from the Chicago Veterinary College, Journal of the McKillip Veterinary College, a story on a new scourge of modern Egypt or arsenic poisoning of cattle for revenging, by J. B. Piot-Bey, complete the series of the souvenirs on hand and for which I address my thanks to the senders.

A. L.

THE EDUCATIONAL QUESTION AT KANSAS CITY.

Elsewhere will be found a preliminary announcement of the literary program to be offered at the forty-fourth annual meeting of the American Veterinary Medical Association, which will convene at Kansas City on September 10, and continue for four days. There are given in the list of papers to be presented, twenty-three subjects by as many well-known veterinarians, scattered over the American Continent and even invading that of Europe. Every phase of professional work is represented, as well as some of the questions of policy which are pressing for consideration. Of paramount importance is the subject of education and the regulation of its teaching in the various schools. While there is not one who does not admit the necessity of greater uniformity among the colleges in

the matters of entrance requirements, curricula, and length of term, there has not yet appeared an individual who has formulated a practical system by which these reforms can be brought about. In the confederation of states constituting the American Union, the National Congress cannot promulgate laws which will take away from the separate commonwealths the right to regulate their own educational institutions. Therefore, the standard of veterinary education must forever, so far as laws are concerned, be the composite result of the judgment and wishes of many and varied legal bodies.

The unifying influence must come from within the profession, through mutual agreement, and by whatever power can be exercised by such representative organizations as the A. V. M. A. and the Association of Faculties and Examining Boards.

The initial step to wield this influence and power was taken at Cleveland in 1905, when the latter association was reorganized for this express purpose. For two years the path had been blazed in the addresses of Presidents Stewart and Bell at the openings of the annual conventions of the A. V. M. A., the latter official making recommendations which resulted in the active work of accomplishment. The plan was briefly to work through a harmonizing of all interests and by mutual agreement to establish a minimum standard to which all schools should bind themselves to conform. This was to be worked out through committees representing every element concerned in the cause of education, and it is ardently hoped that if the question is approached with earnestness, and with a mutual desire to bring about true reform, much may be accomplished. President Law has appointed a committee of three from the body of the A. V. M. A., not one of whom is connected with any school, and to confer and work with them President Hoskins, of the Faculties and Examining Boards Association, has named three committees of three each, consisting of representatives of the state colleges, of the private schools, and of the examining boards. It is conceded that unless there is a concerted endeavor to bring about unicity in the regulation of the

educational institutions, little can be done by force; that the only power that can be exerted lies in the agreement of the Examiners to recognize for licensing only those schools which conform to the minimum requirements agreed upon by this amalgamated organization, and by the A. V. M. A. in its right to accept as members only graduates of such schools. These two powerful agencies can be exerted with telling effect, if a standard of requirements can be agreed upon. This can and should be done at Kansas City.

The second step toward carrying out the object of the movement was taken at New Haven last August, when eight schools (all which had representatives present) agreed to keep a record of all the facts connected with the matriculation of students for the session of 1906-07 and present them for inspection at the Kansas City meeting of the Faculties Association, while the Secretary was instructed by vote to correspond with all the other schools to solicit similar coöperation. When these facts are given to the conference there may then be opened up a means of raising the requirements at points where they are deficient; and when once all schools agree to a minimum standard, a working basis will have been created whereby the Examining Boards and the A. V. M. A. will have authority to put their power into operation. The changes should not be radical, but every year there should be a distinct advance toward a higher and a more uniform standard, to the end that an American veterinary diploma may be of definite quality, and finally reciprocity among all the states in the matter of recognizing the licenses granted by the various Boards.

ACCOMPLISHMENTS IN PENNSYLVANIA.

In the course of a review of the benefits secured by the veterinary profession in various sections of the North American Continent during the past session of the law-making bodies, in the June number of the REVIEW, the situation in the Keystone State was briefly summarized by saying that "the profession asked for a great deal and it was most liberally dealt

with." While this broad statement is comprehensive and strictly true, the actual accomplishments of the profession of that state are so wonderful as to be worthy of more than that passing notice; and we have secured from one of the most indefatigable of her workers, Dr. W. Horace Hoskins, an enumeration of the most remarkable legislative record in the history of the profession in this country, if not in the world. It emphasizes the fact that in unity there is strength, for the veterinarians of Pennsylvania acted in perfect harmony and stood as a solid phalanx in their insistence upon the justice of their claims, working in season and out of season, following up every possible avenue of strength, and never resting until the executive signature was affixed to each measure. The whole constitutes an object lesson which should be an inspiration to the profession everywhere. Under the irresistible leadership of Leonard Pearson, ably assisted by her strongest men, and supported by the entire profession of the state, nothing was deemed impossible, and the campaign of education and argument was carried on from the assembling of the Legislature until its adjournment.

Dr. Hoskins' summary of the year's results before the Legislature is as follows:

"The bill for \$100,000 for the Veterinary Department of the University for additional buildings passed both houses; the State Livestock Sanitary Board secured \$135,000 in the general appropriation bill and also \$29,000 for additional land for the State Farm and maintenance of the work under way; a Deputy State Veterinarian with a salary of \$2100; a clerk at \$1200 and stenographer at \$900 and \$100 per month for traveling expenses; a stallion service inspection bill with \$3500 to carry out its purposes; \$68,000 for meat inspection service with ten veterinary meat inspectors at \$1800 per year each. The amendment to our veterinary law was vetoed by the Governor, which was not the least of our accomplishments. We have fought a hundred obstacles, and gained about everything we really sought."

FEEDING THE DUPES.

The Veterinary Correspondence School of London, Ontario, has adopted a new method of coaxing dollars from the pockets of its dupes. Instead of giving a course of correspondence lectures and issuing a "diploma," it offers to sell books on special operations. Thus it advertises to send for five dollars a book containing a lecture on castration, guaranteeing that the purchaser will be able to perform the operation on original or "rig" horses better than most veterinary surgeons. For another five dollars "The Veterinary Obstetrical Compendium" will be forwarded, so that its possessor may make money through his ability to deliver domestic animals when dystokial troubles occur. Now that our Canadian brethren have raised veterinary education in the Dominion to a high plane, cannot a law be secured to put this "mill" in limbo?

A HIGH DEATH RATE among foals is reported from many parts of the country, and it is feared that the 1907 crop, which promised to be the largest in history, is doomed to be below the average.

"DID not receive May number, and think you must have cut me off. Don't. I may be negligent, but am not blind enough to my own interests to want to stop the REVIEW."—(J. W. Corrigan, D. V. M., Batavia, N. Y.)

Two valuable reprints from the annual report of the New York Zoölogical Society are by W. Reid Blair, D. V. S., Pathologist of the Society, and are entitled "Actinomycosis in the Black Mountain Sheep," and "A Peculiar Skin Disease in an Elephant."

A ST. LOUIS SUBSCRIBER states that a man named Hayward took his subscription for the REVIEW and an English journal, charging him four dollars for the two papers for one year. It is needless to state that the publishers had not authorized this, nor did they receive any money or other word from "Hayward." The REVIEW has so frequently plainly stated that it does not "club" with any other publication, and that the subscription price is uniformly the same to all, that the wonder is that any of its readers should be swindled in this way. Whenever any one offers to take a subscription for less than the advertised price, he may be written down as a swindler.

ORIGINAL ARTICLES.

TUBERCULOSIS : THE MODE OF INFECTION AND THE COW.

BY E. C. SCHROEDER, M. D. V.,

Superintendent of the Bureau of Animal Industry Experiment Station at Bethesda, Md.

Read before the April Meeting of the Veterinary Medical Association of the District of Columbia.

Investigations, both at home and abroad, have given results that discredit the commonly accepted theory that pulmonary tuberculosis is a disease caused by the inhalation of air in which dust that contains tubercle bacilli is suspended.

If it can be conclusively shown that dust is not an important factor in the dissemination of tuberculosis; that the danger from dried, pulverized, tuberculous sputa has been taken for granted and exaggerated and has not been proven, and that tuberculosis, irrespective of its location in the body, pulmonary or the most frequently occurring form included, is caused by the entrance of the infecting agent through the digestive tract, it will be an achievement of incalculable importance because of the corrective influence it will exercise on the strenuous fight against tuberculosis that is in progress to-day in most civilized countries of the world.

Let us examine some of the evidence:—The infection of the pulmonary tissue directly through inhalation of air in which infectious dust is suspended, on superficial view, seems like a simple and reasonable way to account for lung diseases of various kinds, but it has the quality of a severe criticism of nature. It means that no satisfactory provision has been made for the protection of a very important organ against dangers to which it is constantly exposed. I do not believe that nature has been as delinquent as this easy and comfortable mode of pulmonary infection implies.

On its way to the lung the air moves through moist-walled,

indirect passages. After it has penetrated as far as the larger bronchial tubes its continued motion is due less to the impetus given it by the expansion of the thoracic cavity through muscular action than to gradual diffusion. This diffusion conforms to the law of the diffusion of gases, and depends upon the difference in the density of the freshly inspired air, which is practically free from carbon-dioxide, and the air already in the lung, which contains a larger volume of the named, heavier and denser gas. It is probably aided by the elasticity of the pulmonary tissue.

It is a law of physics that the force required to deflect a moving body from its path is proportioned to its weight and velocity. Hence, if a light fluid like air, holding relatively much heavier particles like dust in suspension, moves through a curved or indirect passage, the force required to change the direction of the air, or to deflect it from its course, will be much less than that required to deflect, or change the direction of the heavier particles or dust. The air will turn the curves in the passage more readily than the solid particles, and the latter will be thrown with direct force, the measure of which depends upon their velocity and greater specific gravity, towards or against the walls of the passage at or near its deviation from a straight course. This is precisely what occurs in the air-passages when air that holds dust in suspension is inspired.

When dust is thrown against the moist walls of the air-passages its progress towards the lung is stopped, because no current of air is strong enough to detach dust from a moist surface. If some particles should happen to penetrate as far as the trachea or larger bronchial tubes, where the air is almost stationary and the completion of the respiratory process depends upon diffusion, they would rapidly gravitate and be deposited on the ciliated epithelium which lines the trachea and bronchial tubes. Solid substances can be held in suspension in a fluid of lower specific gravity only when the fluid is in motion and a sufficient amount of friction to overcome their higher specific gravity is thus brought to bear on their surfaces. Once a substance is de-

posited on the ciliated epithelium of the air tubes its return to a region from which it will be coughed up and either expectorated or swallowed is assured, and its penetration to greater depths effectually opposed.

In an interesting paper entitled "Man's Natural Protective Agencies Against Tuberculosis," read at a meeting of the Tri-State Medical Association of Alabama, Georgia and Tennessee in October, 1906, by Dr. Silvia Von Ruck*, we have the following passages :

"The function of the nose especially in filtering the inspired air is practically perfect." "As the air enters the nasal vestibules large particles of dust carried by it are arrested by the vibrissæ and the direction of the inspiratory current is such that fine particles and bacteria are drawn immediately against and deposited upon the moist surface of the anterior portion of the septum." "Here the greater part remains adherent, while further deposition occurs as the current continues on its way through the intricate and mucous coated nasal passages to the nasopharynx." "At this point the inspiratory blast is deflected at a sharp angle against the upper portion of the posterior wall of the pharynx, which again conditions the deposit of particles still in suspension." "Thus in ordinary atmospheres the air reaches the larynx practically free from dust and microorganisms."

Dr. Von Ruck gives good authority for making these statements, which is really more than their self-evident character necessitates. With reference to mouth breathing he says, "Nevertheless, only a small part of the dust inhaled enters the trachea, Kayser having shown that most of it remains on the tongue and soft palate."

The anatomical and physical reasons against the theory that the lung becomes affected with tuberculosis or other germ diseases directly through the inhalation of infected air seem to justify us in throwing it out as an unqualified assumption, but they do not stand alone as arguments.

* *New York Medical Record*, Nov. 17, 1906.

In November, 1901, Prof. Dr. P. Baumgarten* in Tübingen pointed out that the inhalation theory to account for tuberculosis of the lung stands on such weak feet that we cannot say a single case of pulmonary phthisis has been traced with certainty to the natural inhalation of the specific bacillus. In his experiments he produced tuberculosis of the lung in animals by infecting them through the uninjured walls of the urethra and urinary bladder, and demonstrated that the localization of tuberculous lesions in the apices of the lung was no argument for the inhalation theory, as this was also the favorite seat of the affection when the bacilli reached the lung through the blood stream. While Baumgarten says that he does not wish to antagonize the inhalation theory, he concludes that it has been given too much importance and that it has not been proven to be the exclusive or even the most important mode of infection. In support of this view he quotes the work of Ribbert, Aufrecht and Weigert and Ponfick, whose investigations and analyses of the question speak strongly for the hematic introduction of the bacilli into the pulmonary tissue.

While Flügge has proven the danger of infection in the environment of tuberculous subjects affected with so-called open tuberculosis by showing that they expel, during cough or even during speech, minute particles of fluid that contain fresh, virulent tubercle bacilli and remain suspended in the air for some time, Cadéac† has shown that the danger from dried, pulverized, tuberculous sputa has been greatly over estimated. The latter investigator, as was pointed out in B. A. I. Bulletin No. 93, found on investigation that tuberculous sputa lost their infectiousness very rapidly, dried slowly, and were difficult to pulverize. Dust ground from tuberculous sputa he declares to be harmless both to the digestive and respiratory tract.

Among the investigations that have supplied a foundation for the dust hypothesis those of Cornet are of first rank. In speaking of them Flügge‡ says: "To establish that dust is in-

* *Wiener Med. Wochens.*, Vol. 51, No. 44, pp. 2049 to 2052.

† *Le Bulletin Médical*, Sept. 5, 1906.

‡ *Zeitschrift für Hygiene*, Vol. 38, p. 4.

fectious it is necessary to be certain that such dust alone is gathered for tests which reached the location from which it is taken by transport through the air as dust, because in this way only can we know that we are dealing with material that can float in the air." From this point of view, Flügge continues: "Cornet's investigations of the tuberculous infectiousness of dust have little value, as he invariably used wet sponges to collect the material he examined and with them rubbed off adherent particles which had not been transported through and were not at all capable of floating in the air."

Heymann* showed that dust from dried sputum is comparatively coarse and endowed with brief infectivity. This coarseness would also prevent its ready transportation through, and long suspension in the air. He repeated the work of Cornet, but tried to avoid the errors of the latter by using dry brushes in the place of wet sponges to collect the dust. His results show that in neglected rooms inhabited by phthisical persons and in sanatoria containing many consumptives, virulent tubercle bacilli in dust capable of air transportation are comparatively rare.†

Jousett‡ found that guinea-pigs inoculated with sputum that had been exposed to sunlight or even diffuse daylight either remained well or succumbed to tuberculosis very slowly, thus showing that light has a powerful attenuating and sterilizing effect on tubercle bacilli. Sunlight probably is the most potent natural agent for destroying tuberculous infection, and it is aided by drying and pulverization because by that means the bacilli are more directly exposed to light in an unprotected or uncovered way.

Dr. A. Di Donna§, in an article in which he describes investigations made at the Hygienic Institute of the Royal University of Naples, regarding immunization with anthrax and tubercle bacilli that were attenuated by exposure to sunlight,

* Editorial in the *Jour. Amer. Med. Asso.*, Oct. 12, 1901.

† *Zeitschrift für Hygiene*, Vol. 38, p. 4.

‡ *Weiner Med. Wochens.*, 1901, No. 28, p. 1366. (*Soc. de Biol.*, Oct. 27, '01).

§ *Centralb. für Bact. und Parasitenk.*, Vol. XLII, No. 7.

gives us the following information: "If a tubercle culture is exposed to sunlight from 9 A. M. till sunset for 8 days it has become sterile. This is true for the months of June to October inclusive. A culture exposed 6 days occasionally causes tuberculosis on injection of guinea-pigs. A culture exposed 6 days late in the fall or in winter, while it is greatly attenuated, always causes tuberculosis when inoculated into guinea-pigs."

To further show the significance of sunlight and drying as a factor for the destruction of tubercle bacilli I will read you a literal translation of the paragraph with which Dr. Di Donna immediately follows the foregoing statement of results obtained with his experiments:

"My results vary somewhat from those which Koch incidentally stated in the interesting communication at the International Medical Congress in Berlin in 1890 regarding bacteriological examinations of the tubercle bacillus, in that he (Koch) found that a culture exposed to diffuse light at a window was killed in 5 to 7 days. Also Migneco reached somewhat different results. But as Koch rightly remarked at that time tubercle bacilli were killed within a few minutes or a few hours according to the thickness of the layer in which they were subjected to sunlight*."

In connection with these assertions of Koch it must be borne in mind that his fame was not as universal in 1890 as later in 1901 when he made his address before the British Tuberculosis Congress, in which he declared against the identity of human and bovine tuberculosis on wholly insufficient and unsatisfactory evidence. At the earlier date he was still a man of whom it was required that his conclusions should be based on and be in harmony with unimpeachable evidence.

It is surprising how little use has been made of data that has long been available to show the low importance of dried and pulverized sputa as an agent for transmitting tuberculosis.

The difficulties in the way of the respiratory theory are

* *Centralb. für Bact. und Parasitenk.*, XLII, No. 7, p. 645.

truly great; excepting in the immediate environment of tuberculous subjects, it is practically a case of no infection to breathe and no way to breathe it. The theory falls when we examine the respiratory mechanism and the natural laws that control the respiratory processes, and it likewise falls when we learn what happens to the infectiousness of tuberculous material when it is subjected to the drying and pulverization which must precede its suspension in the air.

The fact that tuberculosis is a disease, the infectious agent of which enters the body through the intestinal canal, is receiving constantly increasing support. One thing that has stood in the way of its acceptance is the assumption that tubercle bacilli cannot pass through the intestinal wall and lymph glands without causing tuberculous lesions. This assumption has been refuted by the investigations published by Cotton and myself in B. A. I. Bulletins Nos. 86 and 93, and by Mohler and myself in Bulletin No. 88. The evidence given in these bulletins is perfectly supported by that of investigators like Ravenel, Nicolas and Descos, Nocard, Dobroklonski, Desoubry and Porcher, Calmette and Guérin, Schloszmann and Engle, Vallée, Rabinowitsch and others.

In a paper read before the American Public Health Association in 1903, Dr. M. P. Ravenel,* of Pa., draws the conclusion "that it is fallacious and misleading to claim that food tuberculosis should show itself in a primary intestinal lesion." This is supported on an experiment in which he fed ten healthy dogs once each with an emulsion of melted butter and warm water that contained numerous tubercle bacilli. The dogs were first purged with castor oil and made to fast 24 hours and then fed the emulsion through a stomach tube. They were killed about four hours later and their mesenteric glands removed and as much chyle as possible collected, and when this material was tested for the presence of tubercle bacilli, microscopic examination gave positive results for three, and guinea-pig inoculation for eight dogs. The two dogs with

* *Journal of Medical Research*, Vol. X, pp. 460-462.

which the results were negative received much less virulent tubercle bacilli than the others. A very careful examination of the intestines of the dogs was made, including microscopic examinations of sections cut from the intestines of two dogs, but no lesions were discovered.

Nicolas and Descos* in 1902, with experiments somewhat like those of Ravenel, proved that tubercle bacilli fed to dogs in soup occurred three hours afterwards in their chyle vessels and thoracic duct in sufficient numbers and of sufficient virulence to cause tuberculosis in guinea-pigs.

Ravenel refers to this work of Nicolas and Descos, and both he and they refer to the fact that Dobroklonski† showed as early as 1890 that tubercle bacilli after short contact may penetrate the intestinal wall of guinea-pigs without demonstrable lesions, and that Desoubry and Porcher,‡ students of Nocard, proved in 1895 that bacteria are carried through the intestinal wall of dogs during digestion of fat so that they can be detected in the chyle by plate cultures.

Primary intestinal tuberculosis is of rare occurrence. Dr. Koch made use of the fact as an argument against the infectiousness of milk from tuberculous cows for man.

No one can reasonably doubt that swallowed tubercle bacilli will shortly reach the lung if they can pass through the healthy wall of the intestine and reach the thoracic duct three hours after they entered the stomach. The contents of the thoracic duct are poured into the venous circulation, and from there to the heart and through the pulmonary arteries is, compared to the rapidity with which the blood circulates, a very short distance and a very direct, open passage.

In speaking of the capillaries of the lung Gray§ says "they form a very minute network, the meshes of which are smaller than the vessels themselves; their walls are exceedingly thin."

* *Jour. American Med. Association*, Vol. XXXIX, p. 1055.

Jour. Phys. et de Path. Gén., Vol. 4, 1902, pp. 910-912.

† *Arch. de Med. Exp. et d'Anat. Path.*, March 1, 1890, p. 253.

‡ *Comp. Rend., Soc. de Bio.*, XLVII, 1895.

§ Gray's Anatomy, New Ame. Edition, 1905, p. 1396.

The picture this presents to our minds is that of an excellent filtering apparatus.

Calmette and Guerin's experiments have been so widely published that hardly more than a reference to them is necessary. These investigators convinced themselves that, in the immense majority of cases, the localization of tuberculosis in the lung or pleura results from arrest in the lung or pleural capillaries of microphagic leucocytes rendered immobile by the toxic secretions of the bacilli which have been ingested.* They refer to the failure of the great number of attempts made to directly infect the lungs in animals either by causing them to inhale infectious dust or by introducing virulent culture into the trachea, and express themselves as convinced that the rare cases in which these methods of infection have succeeded can be explained on the supposition that the germs deposited on the upper air passages and in the trachea and bronchial tubes had been expelled and swallowed with saliva and thus carried to the digestive tract.†

Schloszmann and Engle‡ observed that tubercle bacilli introduced into the stomachs of guinea-pigs through openings in the abdominal wall rapidly reached the lung. They believe that the bacilli pass through the mesenteric lymph glands and reach the lung through the lymph stream and the thoracic duct. This view is in perfect accord with and supports that published by Cotton and myself in B. A. I. Bulletin No. 86, and is now entertained by many competent and recognized investigators. There may be some disagreement among different observers as to the manner in which the bacilli pass through the lymph glands and lymph channels, as it has not been fully determined whether they float free or are carried along inclosed in cells. Relative to the path taken there seems to be little or no room left for doubt.

Rabinowitsch§ says: "On the ground of many observa-

* *Journal of Comparative Pathology and Therapeutics*, Vol. XIX, part 3, p. 244.

† *Jour. Comp. Path. and Therap.*, Vol. XIX, part 3, p. 234.

‡ *Deut. Med. Wochenschrift*, Nov. 27, 1906.

§ *Deut. Med. Wochenschrift*, Nov. 8, 1906.

tions and experimental demonstrations we are inclined much more now than formerly to regard infection with tuberculosis through ingestion as playing an important rôle. Numerous ingestion experiments with different species of animals have not only produced pulmonary and bronchial gland tuberculosis without lesions of the intestinal tract, but it is also reasonable to assume that bronchial gland tuberculosis in children has an intestinal origin because it is possible to discover the presence of tubercle bacilli in their apparently healthy mesenteric glands."

That solid substances in fine subdivision may readily pass through the intestinal wall and lymph channels and reach the lung and be deposited in it was shown by the anthracosis investigations of Vansteenberghe and Grysez.* They concluded that anthracosis, or coal-miners lung, is produced especially by absorption of dust that reaches the intestine.

It does not seem to be necessary to add to the testimony here presented. Persons who examine the facts carefully and impartially will find themselves forced to accept the two following conclusions:

1st. The most important, and probably the only important, entrance-way of the tubercle bacillus into the body that must be considered in the general fight for the suppression of tuberculosis is the digestive tract.

2d. Tuberculous material that has been exposed to sufficient light, drying and pulverization to enable it to float in the air has little or no virulence, and it is questionable, if it is swallowed from the upper air passages on which it may be deposited, whether it retains, excepting in rare instances, sufficient virulence to overcome the natural resistance of the body to infectious organisms.

With the respiratory and dust hypothesis discredited and the intestinal entrance of the tubercle bacillus into the body established, fresh tuberculous material that may contaminate articles of food stands out as the all-important danger against

* *Annales de l'Institut Pasteur*, 1905.

which our efforts should be directed. And it is here, among these dangers, that the cow must receive careful consideration.

In B. A. I. Bulletin No. 93, in speaking about Flügge's investigations relative to the minute particles of infectious fluid that are expelled from the mouths of tuberculous persons and float in the air for some time, I pointed out the danger from intrusting the preparation and also the serving of food to such persons. We have no reason to doubt that the proximity and environment of persons affected with open tuberculosis is dangerous. The minute, infectious masses of fluid contain fresh, not dried and sterile, tubercle bacilli, and while they cannot be carried a great distance or retain their infectiousness long, they may get into our mouths, noses and throats, or on food, and eventually be swallowed. This danger of dissemination and transmission from person to person cannot be ignored and must not be undervalued. It is a strong argument for the isolation of persons affected with advanced tuberculosis of the air passages.

We will now give our attention to the cow. Investigations made at the B. A. I. Experiment Station by my assistant, Mr. Cotton, and myself, showed that tuberculous cattle which had retained the general appearance of health very frequently pass enormous numbers of tubercle bacilli with their fæces. According to Dr. W. H. Park,* of New York City, the same fact has been observed by other investigators both here and in Europe. With the subcutaneous inoculation of such fæces we produced generalized tuberculosis in guinea-pigs, and with the injection of milk soiled with such fæces, proportionately no more than commonly enters the milk pail, we also produced generalized tuberculosis. The investigations will be published in detail at an early date as a Bulletin of the United States Bureau of Animal Industry.

Recently Cotton examined the fæces of twelve cattle specially selected by Mohler and myself for an investigation, in which we desired to use very slightly, recently affected tuber-

* *New York Medical Record*, March 23, 1907.

culous animals. It is my sincere conviction that few veterinarians would have been able to diagnose tuberculosis without the aid of tuberculin among the twelve cattle, and yet, five, or $41\frac{2}{3}$ per cent., were found to be passing tubercle bacilli in their fæces. No stretch of the imagination is required in the face of this fact to realize that the environment of a herd of tuberculous dairy cows is loaded with tubercle bacilli.

Among men who have studied the subject, a great majority are of the opinion that tubercle bacilli are rarely or never secreted with milk by tuberculous cows with unaffected udders. I, too, am of this opinion, and support it on the numerous tests of milk from tuberculous cows I have made during the last dozen or more years. But there is this to be said about my tests, and I presume the same may be said about those made by most other men: they have an evidential value that goes far to prove that healthy udders rarely or never eliminate tubercle bacilli, but they give us no data relative to the frequency with which milk that has been exposed in the usual way in the environment of tuberculous cattle contains tubercle bacilli. The investigator who collects milk from tuberculous cows, in order to test it for the presence of tubercle bacilli, if he takes no other precautions, milks directly into a sterile bottle or some other small receptacle and removes it at once from the environment of the cow or covers it to prevent the entrance of foreign material. The relative chances for the introduction of foreign material are almost infinitely greater for the wide-mouth, long-exposed milk pail than for the carefully handled, smaller receptacle. Hence we must not attach too much weight or importance to these milk tests. As I have already said, they give fairly satisfactory information about the tubercle bacilli secreted from healthy udders by tuberculous cows, but not about the tubercle bacilli in the milk of either tuberculous or healthy cows when it is milked and exposed in the environment of tuberculous cattle. The truth of this conclusion is strongly supported by the following statement made in the *Veterinary Rec-*

ord, of England, by J. W. Brittlebank *: "In an examination of 10,527 cows kept in city stables only one animal was found to be affected with tuberculosis of the udder. During the same investigations of the milk supply of Manchester, England, 764 samples were taken from milk delivered by 565 different farmers from different counties, and in these samples the percentage of tuberculous milk varied from 3 to 12."

In practical terms this means, as a little simple arithmetic will show, that for every one cow affected with tuberculosis of the udder we may have from 315 to 1263 samples of tuberculous milk, with which that one poor, sick udder has nothing to do.

When we know that over 40 per cent. in a herd of twelve slightly, not visibly affected tuberculous cows are passing tubercle bacilli in their fæces, the danger that milk may be and frequently is infected in the environment of tuberculous cattle needs no further elaboration.

Broërs†, Director of the Bacteriological Laboratory of the Military Hospital in Utrecht, found that 10 per cent. of the market milk in his country contained tubercle bacilli; that tubercle bacilli retain their virulence in milk 3 days even when it has undergone changes that make it unfit for use as food, and that both butter and butter-milk contain tubercle bacilli that, in the former may remain virulent 3 weeks and in the latter 12 days. An important fact emphasized by this investigator is that the sterilization of tubercle bacilli in acid milk is more difficult than in alkaline milk, so that the effective Pasteurization of milk that has lost its normal alkaline reaction must be practiced at a higher temperature, or with a longer exposure to an elevated temperature, than is required with perfectly fresh milk.

Barthel‡ called attention to this fact in 1901, and showed that tubercle bacilli in fresh milk are killed after an exposure of 1 minute to 176° F., and in slightly sour milk not until after 5 minutes.

* Exp. Station Record, U. S. Dept. of Agriculture, Vol. XVIII, No. 6, page 581.
Vet. Record, No. 949, pp 164-165.

† *Zeitschrift für Tuberkulose*, Band 10, Heft 3, pp. 260 to 264.

‡ *Centralblatt für Bakteriologie*, Oct. 8, 1901.

And now, gentlemen, think of the enormous amount of tuberculosis among dairy cattle; of the unsanitary, filthy condition of many dairy stables; of the rapid and wide distribution of milk, and of the short time that elapses after the production of milk before it enters human stomachs. I feel that you will conclude with me that we have constantly present in our cities a vast material for the persistence and dissemination of tuberculosis which may infect our lungs, without a respiratory theory to account for its introduction into our bodies, and which is of greater importance than dried and pulverized tuberculous sputa.

Lately I started a series of investigations to determine the significance of butter as an agent for the dissemination of tuberculosis. While the work is still in its earliest stages, it has given some results that are interesting. When milk to which tubercle bacilli had been added, was separated into cream, skim-milk and sediment in a small centrifugal machine, microscopic examinations showed that the cream contained as many bacilli as the sediment. When the milk to which tubercle bacilli had been added was allowed to stand over night, it was found that the cream contained many more tubercle bacilli than the sediment. In neither case was it possible to find tubercle bacilli in the skim-milk.

Obviously, when cream globules and tubercle bacilli come in contact they adhere to each other with a tenacity that cannot be broken by the difference in their respective specific gravity, which is less with the one and greater with the other than that of water.

We find no encouragement here to eat ice cream and butter with the pleasant conviction that they are free from tubercle bacilli.

I believe I have shown in this paper valid reasons why the two names in its title, "Tuberculosis" and "Cow," should stand close to each other.

We should feel very cheerful about all this, however, because very little thought will reveal that it is a much simpler

and easier matter to fight fresh tuberculous material that must be taken into our stomachs before it can harm us, than it is to deal with a widely scattered, universally present dust from which there is really no escape.

Avoid close contact with tuberculous persons; insist that food shall be prepared, served, sold and in every way handled by healthy persons; clean all dairy herds of tuberculosis as soon as possible, and until this is done use raw milk and dairy products cautiously. These are among the practical and rational conclusions from the most recent investigations of tuberculosis.

TO PREVENT A HORSE FROM KICKING IN THE STALL.—A correspondent of the *Breeder's Gazette* asked for advice in regard to a horse owned by him which had the bad habit of kicking while in his stall. An avalanche of replies came from all parts of the country, most of them embodying the principle of the strap and chain to the hind fetlock or the rebounding bag. But one reader, E. H. Palmer, of Washington County, Ohio, gives his method as follows: "Go to the harness shop and procure a first-class strap of leather, first cut on side, one inch and a half wide, the full length of side, cut tapering at point to three-fourths of an inch. Then get three $1\frac{3}{4}$ " rings, with one straight side if they have them; if not, round ones will do. Have one sewed in end of long strap. Then get a strap $2\frac{1}{2}$ " wide, just long enough to go around pastern of hind foot with edges chamfered nicely with one of the rings in each end. Now get a strap just long enough to go around the horse's neck where the collar fits with a two-inch ring joining the ends of strap. Put this over the horse's head with ring at breast. Put short strap around pastern of near hind foot; run the long strap through rings, then through ring in long strap, and draw up tight. Take tip of long strap, pass up between fore legs through ring in collar around horse's neck, draw up snug when horse is standing in his natural position, and tie strap firmly. Now you have a sure, humane remedy for a horse that is a kicker; it does not interfere with him in the least standing in stall, or in lying down or in getting up, and he would not know it was on unless he attempted to kick. This has been our remedy for kickers for over fifty years, and we have never known it to fail."

THE OPHTHALMOSCOPE FOR VETERINARIANS.

BY GEO. G. VAN MATER, M. D., D. V. S.,

Professor of Ophthalmology, New York-American Veterinary College.

The prospective purchaser of horses of the present day looks for his money's worth, not only as a live stock investment, but with an especial reference to the opinion of the developed veterinarian. He knows, as we have striven to inculcate for so many years, that the day of the "horse doctor" is a thing of remoteness. He thence, naturally, looks for and expects a statement based on knowledge, which acquired knowledge must be of a character profound enough to establish a fact of weight strong enough to withstand a forensic attack. The ophthalmoscope is *the* instrument that enables the veterinarian to state on oath the condition of the (particularly) deeper structures of the eye. The condition of the crystalline lens, so important to know, is laid bare by this wonderful discovery of the great scientist Helmholtz. The incipient cataract is readily diagnosed, where the catoptric test is fallacious. And this last mentioned method is the one usually employed by the dealer and usually to his own satisfaction (sic). But it fails just where it is most needed, *i. e.*, in immature cataract. The veterinarian knowing the minute anatomy of the crystalline lens, understands the import of the star-like striated appearance shown by the ophthalmoscope (the German for cataract is "star") and interprets this appearance as a *beginning* cataract. When this condition presents in a \$6000 colt, the inference becomes quite plain—and as the "laborer is worthy of his hire" the fee of \$100 is not incommensurate. 'Tis again the old question of the "know how." And again, to be able to say, the disc (optic nerve head) looks so and so. That settles that, for you *have seen it!* No guess work; no corollary judgments here. It has been *seen* and all the opposition that may be brought forward cannot detract from the value of that statement. Having viewed a living artery, vein and nerve in a state of physiological

health, the crystalline lens *must* be normal and the eye pronounced serviceably sound. If the lens were affected the rays of light would not be refracted, but reflected, and the reflection would show the non-permeable crystalline lens. Then the diagnosis would be cataract, partial or complete. And a partial obfuscation of the crystalline lens—is, an unsound horse and must be so stated. It must be borne in mind, however, that an eye may be in a state of convalescence—recovering from an attack of iritis, choroiditis, or in the remission stage of periodic ophthalmia (moonblindness—with which condition the lunar sphere has as much or less to do than has our friend John D. Rockefeller), and when, in a district where periodic ophthalmia is prevalent (for instance, the Hudson River Valley), the necessary caution on the part of the veterinarian is obvious. Periodic ophthalmia is irido-choroiditis plus the periodicity, and also plus its consequences. And the consequences are, in unchecked cases, invariably cataract. We have not as yet reached the conservative stage of the French Government, which refuses service to mares having suffered an attack of periodic ophthalmia. No, we still treat subjects veterinarian as a side issue, just as the veterinarian is (or has been) looked on by some—many and various—as a partly educated man, an immature medical curiosity. But, when he confidently throws the ophthalmoscopic light into an eye, sees what he sees, and understands what is observed, he not only acts the part of an educated medical man, but he unconsciously *educates* the laity to an increased and a deserved respect for this most humane and valuable profession.

The ophthalmoscope in the hands of the veterinarian differs from the same instrument in those of the M.D. Let me tell you how. A telephone call from a prominent oculist got me one evening (and while names are unnecessary, when I say that this oculist recently made a tour of Russia in his touring motor car, you will have some idea of his professional success and standing in Manhattan), and he asked me if I was still connected with that horse affair (meaning the N. Y.-A. V. C.), and

with a great effort I told the truth and said "yes." He then told me a patient from afar was in town for treatment and while here had attended the horse show and purchased a team. Since the consummation of that deal he had become apprehensive of the ocular end of one of them and (said the eminent oculist) I am unable to find the disc (optic nerve head), and would I object—it being only a horse—to coming over and looking into the matter? I answered emphatically "no," for all eyes are of interest to me—chicken, canary, dog, cat, cow, or horse. I also told him what my fee would be—a good sized one. "All right," was the response. Then, like an ass, I had to *volunteer* information. "You know, Doctor," I said, "all horses are hyperopic, unless otherwise as the result of disease or accident, and you had better use a plus lens in your ophthalmoscope, that may show you the fundus more clearly." "Oh!" said he. I heard no more of the case and did not meet the Doctor for quite a period, when I mentioned the affair to him. "Yes," he said, with a chuckle, "I got a hundred dollars for that." Isn't that nice, gentle reader? He got a hundred, I got experience. It takes a forceps operation to get gratuitous information from me now. So, in examining an eye, throw a plus (+) lens in front of the sight-hole, a No. +1, No. +2, No. +3 and so on up the scale until you see the fundus clearly, or if instead of improvement in seeing, you get blurring, reverse the procedure and throw a minus (—) No. —1, No. —2, No. —3, and so on down the scale until the desired result obtains. The plus (biconvex) lenses are denominated plainly in white on the reverse of the ophthalmoscope (+1, +2, and so on), and the minus (biconcave) lenses are in red (—1, —2, and so on).

And, remember this, every time you examine an eye ophthalmoscopically, you progress in facility of manipulation as well as in knowledge, if *only* by unconscious cerebration.

"NO VETERINARIAN can be up-to-date without your valuable REVIEW."—(W. A. Axby, D. V. M., Harrison, Ohio.)

REPORT ON SURGERY.*

BY C. C. LYFORD, M. D., D. V. S., MINNEAPOLIS, MINN.

Presented to the Minnesota State Veterinary Medical Association, January 9, 1907.

My report to-day will be on a few clinical cases, such as come to us with "hurry-up calls," generally occasioned by accidental injuries. These cases often require prompt action, good judgment and surgical skill, so that the patient may not only be made useful, but that there may be the least possible blemish.

Whenever you see a *practitioner* who *wavers* or seems to *scringe* before cases of this kind, it is very evident he lacks that quality indicative of reserve force, stability and judgment which forecasts success, unless Mother Nature and the patient outdo the practitioner, and, as a consequence, recovery is in spite of the treatment. Too often the patient is given little if any relief from want of applications of soothing and protective agents, and from lack of trimming away a sufficient amount of the lacerated tissues, which later prove a burden rather than a benefit. Our patients are often plastered, sewed and bandaged so as to make a favorable impression, with apparently lack of judgment as to the outcome, consequently we must later on remove more or less of the injured parts, which delays union and increases the blemish. Stitches are of themselves very often a source of additional scar tissue more unsightly than that of the original wound. My advice would be, "hew to the line," so that by removing all mangled tissues of whatever kind, the wound may at the outset commence to heal.

* Before giving my report on "Clinical Surgery," I wish to correct a misstatement in reporting the discussion at our July meeting which appears in the December (1906) REVIEW, page 1114. It will be remembered I recommended Dr. Hughes' operation for "blood spavin" as an improvement on other ways of which I spoke. I also stated that many of my own operations had come to me or had originated as the results of accidents. Instead of saying this, the report reads: "I think Dr. Hughes' operations have come from accident." It seems to me that it is much safer not to discuss others' work if it must be so misconstrued. It makes me feel that one is placed "between the devil and the deep sea," should he attempt to give credit and a fair estimate of others' work.

Two of the cases that I shall report to-day had fallen into good hands, for their primary treatment at least, which I shall endeavor to give you with his consent.

I.—Chestnut mare, four years old, belonging to James Smith, of West Liberty, Ia. At time of injury, Feb. 1, 1905, Dr. Heck was called to attend the case and found patient suffering from a barb-wire cut of left hind leg, extending from upper edge of castor to a point nearly four inches above the hock, thus completely removing all the cutaneous tissue over a width of two inches and a length of nine inches. At the upper surface the skin was still attached, forming a clump nearly the size of one's fist. This skin was excised and the mare was cared for by Dr. Heck until Feb. 15, 1905, when she was shipped to me at Minneapolis, Minn. (I having purchased her right after the accident). Dr. Heck's treatment consisted in daily applications of the following liniment: Raw linseed oil, $\frac{3}{4}$ l; spirits terebinthinæ, $\frac{3}{4}$ iiss; com. sulphuric acid, $\frac{3}{4}$ iss. Mix. Shake well and apply freely each day. Upon the mare's arrival at Minneapolis, she was cleansed and for ten days dressed with tincture of iron, after which she was sent out into the country, with orders to have the iron application



CUT NO. 1.

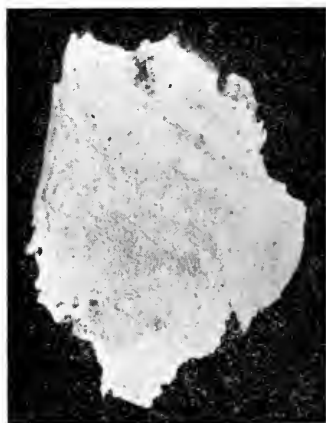
continued once a day until wound was healed. I did not see the mare again until April, 1906, when she was returned to me with the wound not entirely healed, apparently having received little care during the winter. The hock was also somewhat swollen, but no lameness. Tincture of iron was continued once each day and the mare was used for city driving. The swelling soon disappeared and the wound was healed over by June 1, leaving

a scar, as seen in Cut No. 1 (photo was taken nearly two years after accident). It will be noticed that the cicatrix has drawn the castor upwards nearly two inches and the skin has completely covered the point of the hock, extending nearly two inches below, the scar taking the shape of a letter T, with the hair nearly covering it. It will also be noticed how much shorter the left hock looks than its fellow.

II.—Chestnut filly, two years old; photo taken Jan. 5, 1907, five weeks after the accident. This filly was also at West Liberty, Ia., she having kicked through a barb-wire fence, and caught her leg on the wire, which from the size of the wound and scars on leg indi-



CUT No. 2.

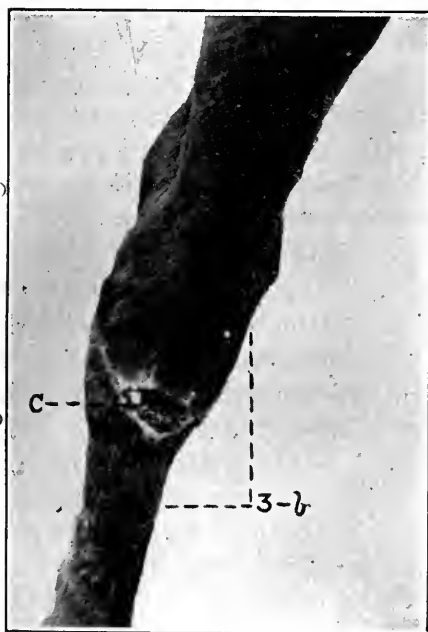


CUT No. 3.

cate that she was held by the wire for some time, as the bone was laid bare at the upper end of the large metatarsal, the periosteum denuded, and bone serrated, as shown in Cut No. 3. This case was also treated by Dr. Heck, in practically the same way as No. 1, except occasionally the Doctor used a weak solution of sulphate of copper to smooth off the granulations. Cut No. 2 shows that the parts have been well *trimmed* and *cared*

for, while the centre of the granulating surface shows a depression from which I assisted Dr. Heck in removing a piece of necrosed bone December 30, 1906, just five days before photo was taken. Cut No. 3 shows photo of bone removed; the serrations indicate to what extent the wire sawed across the leg. The photo shows the exact size of the necrosed bone, the top portion being the extreme upper end of the metatarsal bone (anterior surface).

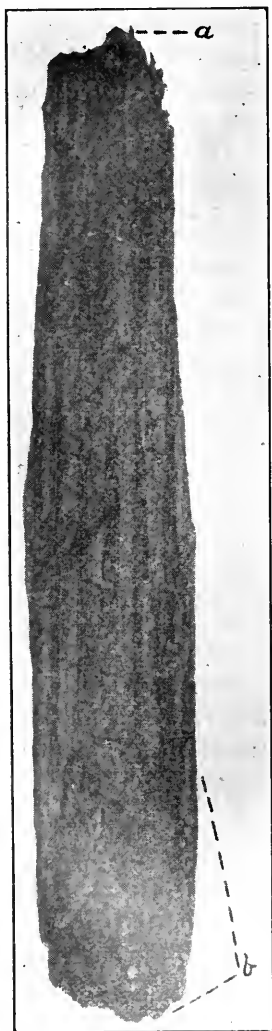
This photo was taken April 18, 1907, being three months later than No. 2. It shows what good treatment and care will do, the parts being properly trimmed at the beginning. Dotted lines indicate the original size of the cut, and show to what extent the cicatrix has already drawn the skin together; C shows the granulating surface still in a healthy condition, thus indicating no tendency to bulge, so that we may feel certain that there will be very little scar tissue when wound is entirely healed.



CUT No. 2a.

IV.—This piece of wagon-pole had entered the hind foot of a five-

year-old mare, as a result of a runaway. I was called to attend the case after the owner had wasted nearly an hour attempting to pull out with his fingers what he thought a sliver, and as I was asked to bring a pair of small pincers to take a sliver out of a horse's foot, I did not succeed much better than the owner, even though I cast the mare. I found the stick had entered



CUT NO. 4.

Full size of stick, $5\frac{1}{2}$ inches long, $\frac{1}{2}$ inch wide, $\frac{7}{8}$ inch thick.

the foot just above the cleft of the frog, making an opening that easily admitted the ends of two fingers, but the stick was out of reach, being imbedded half an inch below the surface. After several attempts to extract it with a strong pair of bone forceps without making any impression on the stick except pulling off small portions of it, I cut through the frog so as to get a better hold; then with an ordinary horse-shoe pincers I was still unable to move it, so I decided to let the mare up and take her to my infirmary, where she was again cast and the division of the frog and sole was found necessary. Then, by using a large pair of tooth forceps, with my knee on the mare's hip, enabled me to pull it out after succeeding in loosening it by twisting. The stick, which had passed along the upper surface of the sole, impinging against the anterior wall of the hoof at the toe, so that the end (a) was bent upward, besides being covered with hair, which it had carried in with it, and still is to be seen in the cut. (b) represents the end which was buried just under the skin and shows that it has been somewhat denuded in the attempts made to extract it.

The wound was then injected with corrosive sublimate and *hot water* (1:500). This was continued for at least a quarter of an hour. I then injected peroxide of hydrogen and swabbed the entire length of the cut out with

1:20 carbolic acid and hot water; then covered the wound with oakum saturated in 1:500 corrosive sublimate, which was held in place with bandage and poultice-boot. The patient was then let up and stood with some weight on the foot and showed very little distress.

The following day I had the mare shod with leather sole hinged at toe and strap fastened to rear of leather sole so that it could be buckled around the foot and so retain dressings for foot and at same time protect the sole of foot from further injury.

On the third day after the accident the mare walked home, a distance of 16 miles, scarcely at all lame, except when she would step on a piece of ice or crusty snow. The owner reported to me on the twenty-first day that she was so lively he could scarcely lead her to water, and that the wound was almost entirely healed, except somewhat bulged where frog and sole were cut. Hot water, corrosive sublimate and tincture of iron constituted the main remedies used.

In this connection I wish to call your attention to the use of frog setons, which have proven quite successful in so-called navicular disease, especially when the tendons and ligaments are sprained. Many practitioners, as well as owners, seem afraid that a frog seton will prove injurious rather than helpful. There should be no such excuses for a surgeon after treating cases like No. 4.

THE Chief Inspectors of the various packing centres were called together by the Secretary of Agriculture at Chicago on May 7, to discuss the problems connected with meat inspection.

THOSE who underrate the speed of the Hackney, should remember that the American trotter is descended largely from this breed—indeed owes his greatest speed lines to the wonderful Norfolk trotter, imported “Bellfounder,” sire of the dam of Rysdyk’s “Hambletonian.” “Hambletonian’s” sire, “Abdallah,” was by thoroughbred “Messenger,” and was so little thought of that he died from ill-treatment and exposure. “Bellfounder” was a fast trotter, having a record of two miles in five minutes, and was of the Norfolk cobs, origin of the modern Hackney.

THE SURGICAL AND MEDICAL TREATMENT OF ACTINOMYCOSIS.

BY P. A. AAGESEN, V. S., ST. ANSGAR, IOWA.

Read before the Meeting of the Iowa Veterinary Association, Jan. 28, 1907.

My experience with the treatment of lumpy-jaw dates back over a period of forty years. However, I will confine myself to the treatments made in Mitchell County, Iowa, during my residence there. Several years ago I was called upon to treat a pregnant cow (a prize winner). I informed the owner that I considered it safest to defer the operation till a week after she dropped her calf, and did so. I then operated on her and effected a permanent cure. The calf at the age of two years developed lumpy-jaw. I operated on him and effected a permanent cure. That animal was used for breeding purposes for several years and the disease never appeared again. This bull was also a prize winner at the age of three years. There was a herd of four hundred cows on this farm and those were the only two cases of lumpy-jaw to develop in the herd during five years. This proves conclusively to my mind that the calf inherited the disease from his mother.

I operated on another cow in this county when five months with calf, and when dropped that calf had a well-developed case of lumpy-jaw. When eight days old I operated on this calf, which is now a six-year-old cow, and until this time the disease has not reappeared, and the offspring of this cow have never developed a case of the disease in question.

Until about five years ago I did not think that lumpy-jaw was contagious. I am of the opinion now that it is. A stock-feeder at St. Ansgar bought a steer with lumpy-jaw in a rather aggravated form. It discharged continually. This steer was placed with other steers for a few days before I operated on him. In thirty days there were three new cases among that herd. My opinion is that when a bunch breaks open and discharges on grain or feed, and when other stock get in contact with such grain or feed the disease will develop.

This same feeder bought a steer for \$40 which had been treated with some kind of "cure" for sometime without any results. I operated on this steer, and two months later he was shipped to Chicago, passed inspection and sold for \$80.

I was called at one time to the Otranto Stock Farm and found two cows afflicted with lumpy-jaw. I found that the bunches were broken on both and that they were discharging. Forty-three cases developed on that farm in about four months.

I was called to another case, a bull. It was a very bad case, and I wanted the owner to fatten the animal and sell it. But the bull yielded to treatment and seemed to be perfectly well and the owner continued to use him as his herd bull. In one year the bull again developed another case of lumpy-jaw. I operated on him a second time and the animal recovered and was shipped to Chicago and passed inspection.

I have experimented with the different kinds of acids and iodine, but find that iodide of potassium and blue vitrol and alum the best treatment.

About twenty years ago I read an article in the *Drover's Journal* concerning a law suit in Chicago over lumpy-jaw cattle. One doctor testified that he had treated cattle for this disease for forty years and had never yet succeeded in curing one single case. Other doctors testified that in most cases it was curable. I say "Yes" to the latter statement. It is my judgment that when the tongue or jaw bone is not affected the case is curable.

UNDER a recent law passed by the New York Legislature the police have the right to destroy maimed horses in the streets without first notifying the S. P. C. A.

THE PULSE BEATS FASTER.—For the first time in years the cry of "Mad Dog!" was heard on our streets last Friday, and men turned pale and gasped for breath. It turned out to be a false alarm, however. A poodle dog belonging to Mrs. Everest, wife of our barber, had got a walnut in his throat, and was running about in his terror. We are not a large city, but things do happen here to stir the blood.—(*Hometown (Pa.) Banner.*)

MODERN VETERINARY METHODS.

BY WALTER J. TAYLOR, D. V. M., ITHACA, N. Y.

ACTIVE AND PASSIVE IMMUNITY AND PROTECTIVE INOCULATION.

All of the different forms of immunity fall naturally into two main groups depending upon the method by which they are produced. These two groups consist of *Active* and *Passive* immunity. In the case of natural immunity it is impossible to explain just how the phenomenon is brought about. Thus we are unable to state positively just which of these two forms lays claim to its production. In the light of our present knowledge *it seems best to allow natural immunity to remain as natural immunity* and confine ourselves to artificial immunity.

Active and Passive Immunity.—In methods of producing artificial immunity, most of them require the introduction into the body of the living virus or the injection of the products (toxins or heated cultures) of the living virus in repeated doses and in constantly increasing quantities. Immunity produced by any of these procedures or by the recovery from an attack of an infectious disease is called active immunity. When the immunity is produced by the injection of the serum (antitoxin) of animals already immune it is called passive immunity.

Active immunity is slow in its appearance, is more or less dangerous to produce and is always attended with at least some discomfort. It varies in the time it lasts, but usually is quite persistent, lasting from a few weeks or months to several years. Passive immunity is quite rapidly produced, is attended with little or no danger and practically no discomfort. It is very limited in its period of duration. The most extensive use in passive immunity is in immunizing children against diphtheria. It is not employed to any great extent in animal diseases. The immunizing of horses against tetanus before an operation is, however, practiced by many operators.

Protective Inoculation.—The practical application of immunity in protective inoculation or vaccination has come to mean the establishment of partial or complete immunity in the individual against the disease in question. The vaccination against small-pox introduced by Jenner in 1796 is a well known example of protective inoculation. Pasteur found that animals inoculated with attenuated cultures of anthrax and chicken chol-

era bacteria were subsequently immune to their respective diseases. From this there has developed many procedures for establishing both active and passive immunity against a number of diseases of animals. The methods that are now in use, together with the diseases against which they are employed, may be summarized as follows:

I. Active immunity.

1. The injection of non-lethal doses of the virulent virus. This method is employed most extensively in immunizing cattle against Texas fever and bovine contagious pleuro-pneumonia. It is used in France to immunize against sheep-pox (clavelization).

The fact that susceptible cattle can be immunized against Texas fever by the use of blood from immunized animals has been demonstrated. The method is being applied with success in several places in the tick-infested district. It is a practical method, but, like the others, it should not be undertaken without a realization of the possible unfavorable outcome.

2. The injection of animals with attenuated cultures of the bacteria of the disease against which immunity is to be established. This method is used most extensively in anthrax, rabies, symptomatic anthrax, swine erysipelas and bovine tuberculosis.

The practical value of vaccination for rabies, over that of most other diseases, is the fact that it is effective if made early in the period of incubation. This vaccination taking advantage of the long period of incubation in rabies, constitutes a form or type of handling of an infectious disease intermediate between protective inoculation and therapeutic method of treatment.

Many efforts have been made to procure a vaccine for tuberculosis. Pearson of the University of Pennsylvania, and von Behring, of Marburg, Germany, have done the most work along this line. A number of other workers have reported results, among whom deSchweinitz, Trudeau, M'Fadyean and Schütz may be mentioned.

The bovovaccine of von Behring consists of living human tubercle bacteria. The results reported by him and others who have tried his vaccine are, for the greater part, encouraging, but as yet the method is in the experimental stage.

II. Passive immunity.

This consists of a temporary immunity produced by the injection of the blood serum of an animal that has been immun-

ized to the disease. It is employed as a prophylactic in swine erysipelas, tetanus and diphtheria.

The use of tetanus antitoxin to immunize horses against tetanus before subjecting them to operations, such as castration, or after receiving punctures of the skin or hoof ("farrier's puncture") is becoming more and more prevalent in those countries and localities where tetanus is common. In France it seems to be used more than elsewhere.

The value of diphtheria antitoxin as an immunizing agent against diphtheria in children is a well known fact.

III. The Simultaneous Method.

This consists in using a strong virus together with an immunizing serum. The process is of comparative recent date. It is used quite extensively against rinderpest, anthrax and rabies.

In case of rinderpest the animals are injected with a protective serum simultaneously with the virulent blood. The immune serum is obtained from animals that have recovered spontaneously from rinderpest or from cattle that have been immunized by bile or some other method. The serum alone of animals that have recovered spontaneously possesses very slight protective properties unless very large doses are given. Kolle and Turner showed that if animals just recovering from an attack were injected with large quantities of blood coming from animals suffering with a fatal attack, the protective power of the serum was markedly increased. This serum may be kept for a long time by the addition of a small quantity of carbolic acid.

In rabies the method is reported to be most successful. Its essential advantage over the other process is that it can be used with good results much later in the period of incubation. It has the additional practical feature that the number of injections is minimized.

In anthrax it is reported to be giving much better results than the double inoculation with a weak and stronger vaccine as followed in the Pasteur method.

Difficulties and Dangers to be Considered in Vaccination.—The results of the efforts that have been put forth during the last twenty years to obtain control over the infectious diseases of animals, show that with the victories there have been many failures. Because of the few diseases for which vaccines have been successful, animal owners often look upon vaccination as a safe and sure means of heading off all infections. Because of

their strong faith in its efficiency and the ease of its application, it is often chosen rather than the more difficult and perhaps immediately more expensive procedures of prevention or eradication. For a few diseases there is a well established natural basis for vaccination, but with others such a foundation does not appear to exist. The reasons for occasional failures in vaccination are not difficult to find. The analysis of the principles underlying vaccination shows that it means the establishing of immunity by the introduction into the body of non-lethal doses of virulent virus or the use of a virus that has been attenuated.

It is not always easy or even possible to know the exact degree of virulence possessed by the vaccine, and again the resisting forces of the animals vary even in different individuals of the same species. If the virulence is too great or the resistance below the supposed normal the vaccine may produce disease in excess of the amount required to establish immunity and perhaps it may kill the animals it was intended to protect. This is one of the results that have been experienced. On the other hand, if the attenuation of the virus is too much, or the animal resistance unusually high, there is not disease (reaction) enough produced to cause an immunity. In this case the results are negative. In cases where the virulent virus is used in small doses, accidents have happened by way of producing a fatal disease instead of a mild attack that was anticipated.

A glance at the diseases for which active immunity has been obtained will show that they are acute toxic affections and not those in which the disease consists of extensive tissue destruction.

Toxic immunity has been obtained in several disorders but a bacterial immunity is much more difficult to acquire.

The dangers in vaccination as applied especially to animals at large may be enumerated as follows:

1. The vaccine may be too much attenuated, resulting in a failure to establish immunity.

2. The vaccine may be too strong (virulent) so that it will produce more disease than is desired, possibly causing fatal results.

3. The attenuated virus of which the vaccine consists may regain its virulence. The distribution of living pathogenic microorganisms among animals is of itself not to be recommended. They may be the starting point of subsequent outbreaks.

4. In using non-lethal doses of a virulent virus, the danger

of producing fatal results because of the susceptibility of the individual treated is always present.

5. In the simultaneous method the danger of accident resulting from too strong a virus, too weak a serum, or the high resistance, or unusual susceptibility of the individual are possible conditions to be kept in mind.

(To be continued.)

EIGHTEEN veterinarians passed the examination of the Nebraska State Board of Veterinary Examiners on April 10.

UTAH NOW HAS A VETERINARY LAW.—In the editorial summary of the legislative grants to the veterinary profession during the last session, which appeared in the JUNE REVIEW, we find that the State of Utah was omitted. By an act of the Legislature approved by the Governor on March 23 a Board of Veterinary Medical Examiners was created and laws enacted to protect the title or degree of those upon whom they have been conferred. The Board is authorized to accept the diploma of a veterinary school recognized by the A. V. M. A. in lieu of an examination upon the payment of a registration fee of five dollars, and it shall examine any citizen of the state of good character who may apply, upon the payment of a fee of ten dollars. While this latter section is quite objectionable, there is little likelihood of any one securing the license of the Board, since the branches to be examined upon are those usually taught in veterinary colleges, and include: Veterinary anatomy, surgery, practice of medicine, pathology, chemistry, veterinary clinical diagnosis, therapeutics, physiology, sanitary medicine, meat and milk inspection, obstetrics, veterinary dentistry, bacteriology, histology, hygiene and such other branches as the Board may prescribe. No person not holding a diploma shall append initials to his name indicating that he holds a degree, but shall be known as a "practicing veterinarian." The law does not prohibit any one from practicing providing he does not use the title "veterinarian," "veterinary surgeon," "veterinary dentist" or analogous title. Those who violate the provisions of the act are deemed guilty of a misdemeanor. While some of the features of the act are quite objectionable, it was the best that could be secured at its inception, and it is to be hoped that the law may be subsequently strengthened. The Board of Examiners appointed by Governor Cutler is as follows: Dr. Ernst, Salt Lake City; Dr. Parker, Ogden, and Dr. N. C. Spalding, Provo.

REPORTS OF CASES.

"Careful observation makes a skillful practitioner, but his skill dies with him. By recording his observations, he adds to the knowledge of his profession, and assists by his facts in building up the solid edifice of pathological science."

RESULTS OF A FEW POST-MORTEMS.*

By C. C. SLAGHT, D. V. S., Tecumseh, Mich.

Although the post-mortem is not the most agreeable part of our work, it is instructive and a source of satisfaction.

It often confirms the diagnosis and seldom fails to convince the owner of the cause of death and that treatment was useless.

In looking over the record of several years' practice the following conditions have been observed.

Wishing to occupy as little time as possible and make the subject clear, we will mention only the most prominent ante-mortem symptoms and the post-mortem results.

I.—A bay driving horse lying easily in his stall was unable to rise; hind parts paralyzed, appetite good, pulse very weak but not quick, temperature a little below normal.

The posterior aorta at its bifurcation in the pelvic region was partially closed by a hollow, yellowish-white, tough mass, about two inches long; the opening through this mass was about one-fourth of an inch in diameter, while the branches were reduced to one-eighth inch.

II.—A bay farm mare, unthrifty and weak, appetite good when idle, but very poor when at work, temperature about normal, pulse full and very soft—more of a steady flow; no well-defined pulse beat.

Attached to the spinal column a few inches in front of the kidneys was a tumor-like enlargement, oval, hard and smooth. Dissection showed a thin bony cup over which the aorta was stretched, the cavity thus formed would hold one-half pint.

III.—A grade Jersey cow, due to calve, was said to have expelled the placenta, but no calf. Examination proved the uterus to be empty and the calf lying in the abdominal cavity. Inside the uterus on the left side a circular opening appeared, the rim was hard and smooth and the opening about six inches in diameter.

* Read before Michigan State Veterinary Medical Association, Feb., 1907.

The hand could easily pass into the womb and through the opening feel the calf, which was dead. The cow was slaughtered and diagnosis confirmed by post-mortem.

IV.—Twice in mares and once in a heifer, extensive lacerations of the anterior walls of the vagina were found, caused by too fierce service on the part of the male.

V.—In two cases hernia of the diaphragm was seen, the first, a brown gelding, six or eight years old, never sick before, was attacked with colic after a day's drive. A circular opening about two inches in diameter was found in the diaphragm, to the right of centre, through which eight feet of small intestine had passed into the thoracic cavity. This portion of the bowel was strangulated and full of gas. The second case, a brown mare, ten years old, due to foal in two months, had been colicky at intervals for about a month; would paw a little, roll over a few times, sit on her haunches a few minutes, get up and shake herself and go to eating.

The last attack was more severe. She also had a two-inch opening in the diaphragm through which sixteen feet of intestine had forced its way. In both cases the edge of the opening was smooth and calloused.

VI.—A large gray gelding, after a drive, was taken with a chill, followed by stiffness and soreness of the muscles and hind-quarters; refused food and water, shifted weight from one foot to another, temperature 104° , pulse 80. He died inside of forty-eight hours. In opening him all superficial bloodvessels were found filled with ante-mortem clot. The internal bloodvessels and heart were also more or less filled with the same tough yellowish-white clot; very little red clot was found in the heart or other organs.

VII.—A six-year-old driving horse developed pneumonia after an attack of influenza. This animal was repeatedly found lying down, resting easily, and in fact only a few minutes before he was killed he was down resting.

One lung was entirely destroyed, excepting the bronchial tubes. In its place there were quarts of thick white pus. The other lung was also affected. There was an intermittent fever, and appetite in this case.

VIII.—A bay mare, suffering from flatulent colic and not responding to treatment, was found to have a twist in the intestine beginning about two feet anterior to the anal opening. She was destroyed and a loop of intestine was found to have dropped over one of the ovaries, thus shutting off the circula-

tion in both intestine and ovary. The ovary was greatly enlarged and the intestine gangrenous.

IX.—A roan gelding having colicky pains seemed to rest most easily while sitting on his haunches. One loop of intestine was firmly held and strangulated by another encircling loop.

X.—A two-year-old heifer turned into a field in the morning ran and jumped about for a few minutes, then suddenly stopped and began pawing and kicking at the abdomen. Attempts were also made to roll over. Treatment for colic and indigestion proved unsuccessful and she died on the fifth day. A section of small intestine about four inches in length was telescoped into itself. All other organs were normal.

XI.—A similar condition existed in a fattening lamb brought to me for examination a few days ago.

XII.—A bay gelding ate his feed at night and was dead in his stall in the morning. A ragged rupture of the diaphragm from its superior and lateral attachments was the only lesion found. There had been no struggle at the time of death, for the stalls were in good condition and the bedding had not been disturbed.

XIII.—A cow near calving time responded nicely to treatment for indigestion, carried the calf till due, and did well at that time. She soon went off her feed and dropsical swellings appeared on the throat, neck, sternum and front legs. The rumen was found to be firmly attached to the diaphragm and some rusty object had passed through the walls of both and then to the apex of the heart, which it had entered a short distance. Firm adhesions existed all along the course taken by the object. The heart was surrounded by a large amount of foul-smelling black fluid.

XIV.—In another case, opened a few days later, a nail had penetrated the lung, causing adhesions, abscess and hardening of nearly the whole lung.

XV.—A cow suffering from a urinary trouble was found to have a floating kidney, enlarged to several times the normal size. This was among the intestines, but still loosely attached to the spinal region.

XVI.—A suckling colt had severe colicky pains, and died quite suddenly. A section of small intestine, thirteen feet in length, was packed with worms, at least three species being represented in the mass.

XVII.—A Holstein cow, partially paralyzed, was suffering

from enlargement of the mesenteric lymphatics, hardening of the liver and renal calculi.

XIX.—A heifer died in the pasture. A knot from the end of a heavy rope was obstructing the passage to the third stomach.

XX.—A Holstein cow, after calving, did not get on her feet. In attempting to explore the uterus it was found to be torn from its neck and the hand passed into the abdominal cavity. Post-mortem confirmed the condition.

XXI.—Two calves, fed milk with cotton seed meal in it, were dead from rupture of the rumen. All the abdominal viscera were more tender than common and of a dark yellow color. Collections of cotton seed hulls were found in different parts of the stomachs and bowels.

XXII.—A two-year-old colt fed a grain ration of coarsely ground corn-and-cob meal, was down, too weak to lift its head. Visible mucous membranes bloodless, clots of blood oozing from the anus. On opening the bowel sharp disk-like particles of cob were found thickly imbedded into and piercing the internal coat of the bowel, thus causing the fatal hæmorrhage.

XXIII.—A two-year-old steer, on pasture, was tapped for bloat; very little gas escaped, and by further examination fluid was detected in the abdominal cavity. A trocar was inserted in the right flank and one hundred and fifty (150) quarts of fluid were removed; this reduced him very much in size and the shock to his system was too great for recovery. Post-mortem revealed a mass of wheat beards high up in the sheath, ulceration of the penis and rupture of the bladder.

XXIV.—A brown mare, down and unable to rise, all mucous membranes very yellow, urine highly colored and fæces very hard and black, constantly working the head and front feet. The owner being unable to care for her wished her killed. Examination showed a large amount of sand mixed with the fæces in the small intestines and great colon, while from one pocket in the cæcum a two-quart basin was filled heaping full of clear sand. The animal had pastured on the river bottoms and drank from the river; always going into the water and pawing while drinking.

XXV.—A gross-feeding grey gelding had been subject to colic for two or three months; one morning he was found vomiting. This condition continued for about eighteen hours, the periods of vomiting occurring from one-half hour to two hours apart and lasting from one to five minutes. A partial rupture

of the stomach extending along its superior surface from front to back about ten inches, where it terminated in a complete rupture four inches in diameter. The portion partially ruptured was dry, black and smooth, while the complete portion looked fresh and ragged.

XXVI.—A Jersey cow, due to calve the second time, was unable to do so. The vagina and rectum were protruding and had been so for ten days. The walls of the vagina were much thickened; the neck of the womb was in a solid, fibrous condition. It was about one and one-half inches in diameter and six inches in length. The posterior wall of the uterus was very much thickened.

XXVI.—A farm horse fell three times with great force, while drawing a heavy load into the barn. She soon showed weakness and finally went down. There was no sign of pain, visible mucous membranes bloodless. The liver was the only organ showing any abnormality. It was dotted with elevations from the size of a pea to that of a common-sized marble; when cut into these were either clots of blood or liquid blood.

These are a few of the results of post-mortems which it has been my good fortune to see and record.

LARGE INTESTINAL CALCULUS IN A HORSE.

By JOHN J. CATTANACH, D. V. S., Newark, N. J.

On April 2d I was called to see a gray gelding, nine years old, the property of Mr. P. Rielly, 966 Broad Street, and found the horse suffering from colic. I administered the usual treatment and also gave a dose of linseed oil, as I had attended the same case on a former occasion and found that he got no relief until oil had been administered. Next day, April 3d, I again called, and found the animal quietly munching his oats and apparently as well as ever.

April 4th I received a telephone message to come immediately, as the horse was in great pain. The result was that I found it necessary to give my attention to the case the greater part of the day, administering rectal injections every hour or so, with little or no result, and also hypodermic injections of morphine and atropine, which eased the pain for a time. I may here mention that this horse was of a very quiet disposition when in his normal condition, but when attacked by pain, would kick with the viciousness of a broncho. Considering the condition of the animal and the severe constipation, I came

to the conclusion that an obstruction was the cause and determined to give a dose of aloes, which I did, and the pain ceased in half an hour and the patient seemed anxious to eat.

April 5th on seeing the case I found that the physic had not operated and called my brother, Dr. Chas. C. Cattnach, in consultation, and after making an examination he concluded that the horse had either a severe attack of constipation or an intestinal obstruction.

April 6th I was very much gratified to find the bowels moving freely, and the horse showing marked signs of improvement, being anxious to eat and standing in a perfectly natural manner.

April 7th and 8th, physic still acting, when it suddenly ceased, and was followed by a quantity of baked up material, which looked as if he had passed the cause of the trouble.

April 9th to 12th, doing nicely, but with intervals of pain after eating.

April 13th, noticed a slight enlargement on the outside of the cheek and thought it may have been caused by drenching; the teeth also being in bad condition. I filed them to prevent a recurrence.

April 14th, enlargement on cheek had disappeared and everything doing nicely, but still constipated; and I naturally thought that as the horse had not been eating much and being well physiced, that nature would do the rest later.

April 15th to 20th, had been administering rectal injections occasionally and the result was little pieces of dried-up material about the size of a hickory nut with a very foul odor. The animal at this period showed more pain, especially after eating, lying down very carefully, rolling on the side and tucking the forward feet up so that the soles were planted almost level on the sternum.

April 21st to 24th, during three days I observed that the lump on the side of the cheek would come and go and I also noticed that it did not appear until he commenced to eat and would disappear immediately after eating. The enlargement was about the size of an elongated egg and by pressing with the fingers would give one the impression of feeling plaster of paris just as it was about to set. As a student at the American Veterinary College, I remember Prof. Liautard showing us a similar case and diagnosing it as a salivary calculus of Wharton's Duct, and on operating he removed a smooth stone about half the size of the first finger and said it was the largest he had

ever seen and that such cases were extremely rare. In my experience I have seen two cases, and this case I am relating, in which nature tried to form a salivary calculus, but it was swallowed as saliva before it got a chance to harden. In my observation it commenced to dawn on me that the saliva being charged with such a material was being swallowed as saliva and was forming an intestinal calculus. Quite a fancy diagnosis to arrive at, but, the more I pondered the more firmly I was impressed, and I gave my opinion accordingly. The animal at this time also showed signs of distressed breathing and uneasiness, and the temperature, which had never exceeded 102° , was now 104° , with a wiry and rapid pulse, showing all the symptoms of enteritis.

April 25th, breathing very much, labored and in great pain. I informed Mr. Rielly that it would be an act of humanity to destroy the horse, which he readily agreed to, and I also told him on post-mortem that I would not be surprised to find a calculus either in the stomach or intestines. The horse was chloroformed and on making an incision in the abdomen a flow of effete material and liquid made its appearance and also disclosed a rupture of the large intestine from an enormous amount of obstructed food. In one part of the intestine was a hard object which by its own weight had formed a natural pocket and which on examination proved to be a calculus weighing six pounds. By rough measurement it is 8 inches long, 6 inches thick, and about the shape of an egg. During the animal's sickness the urine was exactly of an azoturia character, and on examination found both kidneys abnormally enlarged, the right one being diseased and containing pus.

RUPTURED INTESTINE IN A MARE.

By GUS WHITE, G. M. V. C., Kyabram, State of Victoria, Australia.

I was called to see a pure-bred Clydesdale mare, aged about 18 years, and used principally for breeding purposes. The mare was running at pasture with foal at foot and on March 22 was yoked in a plow team. In the evening after the day's work symptoms of colic were noticed, but, as the pain was very slight, little notice was taken. On the morning of the 23d, as the mare was still in pain, I was requested to visit her.

Symptoms.—Anorexia, temperature 101.6° F., pulse 62, quick and very full; abdomen slightly tympanitic and loud borborigmi were heard on auscultation. Surface of body and

extremities normal. Conjunctivæ slightly injected. Fæces passed at regular intervals. The pain shown was of an intermittent character and evinced at intervals of about fifteen minutes, when the mare would go down and roll for a few minutes; then get up and stand at ease. The case was diagnosed as simple spasmodic colic and a draught consisting of spirits ammon. comp. ℥ ii , tincture nucis vomicæ ℥ ii , olei terebinthinæ ℥ i , olei lini O i , was administered. Another draught was left with the attendant, to be given in four hours if necessary.

On the morning of March 24th owner reported mare obtained ease about an hour after the drench was administered and that he thought it unnecessary to give the second dose, and that she had also eaten a small feed. About one hour later he returned to say the mare had died during his absence and requested me to make a post-mortem examination.

Post-mortem.—On opening the abdominal cavity a quantity



of fluid ingesta was noticed in the peritoneal sac. On further examination, a rupture about four inches in length was found in the floating colon, situate about three feet from the commencement of the rectum. The peritoneal surface of the bowels surrounding the lesion was intensely inflamed, showing that the accident had occurred some considerable time prior to death having taken place. The great colon was found to be rather more distended

than usual, but by no means impacted.

I am at a loss to understand why the animal showed no acute pain at any period of its illness, as we are generally told that in such cases the pain is of a most acute character and agonizingly persistent. I am also unable to explain the probable cause of the rupture, and have never before heard of a similar case in which symptoms and results of post-mortem were so misleading.

FORAGE POISONING CURED BY ARECOLINE.

By C. G. SAUNDERS, V. S., Toronto, Ontario, Canada.

On Sunday, May 19th, 1907, at 8 P. M., I was called to attend a horse belonging to a potato dealer. Upon examination I found the horse, an aged bay gelding, standing with his head jammed in the corner formed by the side of the stall and the hay rack, pulse small and weak, temperature normal. The animal was unable to back up, and when pushed over in the stall appeared to have lost all coördination in his movements. Anorexia was complete, but thirst appeared excessive, although there was complete inability to drink. The pupils were dilated and the breathing stertorous. Peristalsis was entirely suspended, the horse having passed no fæces since the night before. There were slight muscular tremors over the crural muscles. Urination and urine normal.

Upon inquiry I learned that he had been fed a quantity of half rotten and damaged potatoes during the previous week, but that he had showed no signs of illness until that morning (Sunday), when he refused his food. I also found the hay musty and of poor quality.

I diagnosed the case as encephalitis caused by faulty food stuff. Prognosis unfavorable.

Treatment.—Hypodermic of strychnine sulph. grs. 1. Rectal injection of warm water. I called again on Monday morning and found little alteration, except that the pulse was stronger and that the bowels had moved. I then administered arecoline hydrobromate gr. $\frac{1}{2}$. Action began in seven minutes; profuse salivation and sweating, and in fifteen minutes the bowels were copiously relieved. Altogether three motions took place, the fæces being offensive and black in color. In half an hour action had ceased, the animal appeared brighter, the pupils less dilated and the breathing quieter. I saw him again in the afternoon, when he drank half a pail of water. Eyes normal and general appearance improved. I again gave strychnine sulph. grs. 1, ordered a pail of water to be left with him and a handful of grass to be given in the evening if he would eat it. The next morning he was apparently as well as ever and ate his morning feed up with avidity. I left powders of nux vomica and ferri sulph. to be given three times a day, and requested owner to report. The horse went back to work on Thursday, and has worked ever since, has good appetite and is improving in condition.

I recommended his owner to buy better hay and to leave off feeding the potatoes.

NECROSIS OF THE DORSAL VERTEBRÆ AND RIB.

By A. W. BAKER, V. S., Brasher Falls, N. Y.

The patient, a three-year-old chestnut colt, owned by Seymour Munson, Massena, N. Y., was brought to the hospital for treatment February 16th, 1907. He had been bitten by another colt about one year and a half before, an abscess formed and was treated by a veterinarian in that vicinity for one year and three months, with no satisfactory results. The owner becoming discouraged, discontinued treatment for three months, and then brought him to this hospital, February 16th.

He was operated on February 21st and was discharged March 19th, with good results.



Upon examination, found the patient to be suffering from purulent necrosis of the dorsal vertebræ and superior extremity of the rib, also the adjoining tissues, including the intercostal space and lumbo-dorsal fascia and panniculus of a large area. The following treatment was

prescribed:

The patient was secured on the table, the area cleansed, shaved and properly disinfected. Made an incision through the skin about 20 centimetres, parallel with the spine; found a large proportion of the tissues necrotic, which were removed; curetted the bone, packed the cavity with antiseptic gauze, and stitched up the wound, which was not disturbed for 48 hours. Removed the packing daily, irrigated the area with hydrogen peroxide, then repacked with mercury gauze, dressed the out-

side with an antiseptic powder composed of boracic acid, acetanilid and subgallate of bismuth.

On March 19th the patient was discharged from the hospital with a small and healthy-looking scar, and on April 4th was all healed up except a very small space.

SUSPECTED STRYCHNINE POISONING.

By H. M. HALVERSON, M. D. C., Yankton, S. D.

After working an hour one morning, a gray mare, 12 years old, was taken suddenly ill, showing the following symptoms: Foaming from the mouth, jaws gradually losing their motion, tongue purple, and with spasms of the body.

As I was out of town, an employé was called, who diagnosed the condition as lockjaw, and gave the following drugs as a sedative: Tincture opii, aloes, spiritus ætheris nitrosi, and digitalis, mixed in water.

When I arrived at 8 P. M., temperature was 101° F., pulse 50, respirations 30, with nostrils dilated. On auscultation a grating sound in the left lung could be heard, but no sound could be heard in the right lung. I was undecided as to whether it was tetanus or strychnine poisoning. Gave fl. ex. belladonna and tincture of strophanthus in minimum doses. After a time I decided that the condition was due to strychnine poisoning, and gave two ounces of tannic acid. The owner thought my diagnosis likely, as in an adjoining field the owner had soaked corn in strychnine to destroy gophers, and scattered it along the edges of the field.

I now passed the stomach tube and injected a gallon of water, after which I began to syphon it out. The animal became delirious, broke away from the attendants, and fell over dead.

On post-mortem the lungs were found highly congested; ante-mortem clots in the heart ventricles. The left kidney was congested, but other organs were healthy, except the floating colon, which contained numerous ecchymotic spots. The contents of the stomach consisted of kernels of corn and grass.

(The post-mortem in this case was incomplete because of failure to make chemical test for strychnine.—R. B. B.)

DR J. R. SHAND (Chicago '07) sailed from San Francisco for Manila on May 5, on a two-year contract for veterinary service in the Philippines.

SURGICAL ITEMS.

BY DRS. LOUIS A. AND EDWARD MERILLAT, CHICAGO, ILL.

A WORD ABOUT LABORATORY DIAGNOSIS.

To a veterinarian in practice the phrase "laboratory diagnosis" implies something entirely out of his sphere, something requiring certain skill and knowledge that only a specialist possesses, and, instead of attempting to delve into its intricacies, he finds it more expedient to apply to the specialist whenever a diagnosis from the clinical symptoms is found uncertain or impossible. The extent, however, to which practitioners should apply to the laboratory to solve the mysteries they encounter, is a matter of serious moment, in that the growing habit will tend to make them less proficient in clinical diagnosis.

Without disparaging this admirable feature of modern medicine and speaking only from the standpoint of the veterinarian in practice, it is incontrovertible that the *keen power of perception* which is a veterinarian's most valuable asset, is not developed by leaving the matter of diagnosis to others. In short, to rush to the laboratory with everything would soon do much harm to the grand art upon which the value of veterinary medicine and surgery has always depended, *i. e.*, the art of clinical diagnosis. Nowadays, it is becoming customary to send a piece of tissue, a scraping, or a sample of a secretion to the laboratory, after only an insufficient physical examination, wait for a few days, and then place implicit confidence in the report presented, in spite of the well-known limitations and uncertainties of the exclusive laboratory diagnosis.

If the laboratory diagnosis was always a correct one, it would be a welcome substitute for the much more difficult method that must always remain subordinate to the development of the special senses and the judgment of the diagnostician; but unfortunately every practitioner of experience knows its shortcomings when exclusively depended upon, when the reports are not supplemented by their own conclusions or when the two do not harmonize. In fact, the revelations of the laboratory when not coupled with the phenomena presented by the patient or the lesion, might better be left out of the question altogether, because they are so often a disappointment and

not infrequently they puzzle instead of enlighten the perplexed diagnostician.

The tendency to place absolute dependence upon the decisions sent from the laboratory, often by men devoid of knowledge outside of their narrow workshops, is as harmful to the progress of clinical diagnosis as it is beneficial to the advancement of research in general. The achievements of the old pathologists were marvelous; it is a pity if the method by which they attained those achievements should wane.

* * *

RADICAL NAIL-PRICK OPERATIONS.

Whenever the navicular sheath becomes the seat of an infective inflammation with copious discharge of synovia, from a nail-prick, bruise or any other channel of entrance, the modern method of treatment consists of thinning the sole and frog, removing all of the sensitive frog from the level of the navicular bone forward, so as to expose the plantar aponeurosis, dividing the latter transversely and then treating the exposed bursa with potent antiseptics. This radical operation is always followed by an immediate improvement of the patient's serious state of disability. The temperature drops two or three degrees, the appetite returns and the patient lies down for a good, peaceful rest, often for the first time in several days. The severe lameness continues unabated for two to three weeks and then gradually improves. At the end of eight weeks to twelve weeks the patient, still somewhat lame, is put to work in hopes that the claudication will gradually disappear, but, unfortunately, the expected improvement does not arrive and the patient continues to limp more or less, week after week and month after month. Finally the patient is sold as a cripple by the disappointed owner, who seldom fails to vent his wrath upon the new operation that was used in lieu of the old linseed poultices which had never failed him in the treatment of nail-pricks. And the surgeon, poor devil, if he escapes a suit for malpractice, usually forfeits his hard-earned fee.

Seriously, the radical operation for nail-pricks must be approached cautiously, because of certain prevailing prejudices in favor of old lines of treatment and also because it is sometimes actually harmful. Under sensible antiseptic treatment and good drainage, purulent discharges from the navicular bursa sometimes terminate fatally, sometimes they leave the patient a permanent cripple, but sometimes they make exceptionally

good recoveries. From our observation on many cases, this order of things is not materially changed for the better by the much-lauded radical operation. It is true that certain serious cases, which would probably die under the old lines of treatment, are saved, but since not a case operated upon satisfactorily recovers from the lameness within a reasonable time, and many are very lame for all time thereafter, the operation deserves the discredit of harming all of those cases which would have made good recoveries under the old lines of treatment. If it is insisted upon as the universal treatment for this affection, it deserves to be condemned, but if reserved for the preservation of life in bad cases, it is indeed commendable and worthy of the highest praise. The selection of cases must be based upon the amount of lameness, the acuity of the infection, the local and systemic disturbances, and the probable resisting powers of the patient. So long as the toe is placed to the floor in walking and there is no swelling about the coronet at the heels and in the hollow of the heel, the operation should be postponed, especially if the patient's general condition remains fair. On the other hand, when there is a high fever, acute pain that prevents the support of weight, acceleration of the respirations, a loss or suspension of the appetite, and an acute, threatening local inflammation that manifests itself by swelling about the heels and by bulging of the velvety tissue through the pared hoof, the operation should be insisted upon as the only sensible method of intervention. Between these two extreme cases are all the intermediate ones which will tax the judgment of the surgeon as well as the temper of the client.

It may be claimed that neurotomy should be resorted to in the treatment of the lameness that supervenes this operation, but neurotomy is not a pronounced success in dealing with this sequel. Sometimes it does not even modify the lameness, and in the hind foot when tibial neurotomy is performed the patient's usefulness will be of exceedingly short duration. *Entre nous*, be careful, as the results at best will bring but little applause.

DR. W. H. DALRYMPLE, Veterinarian Louisiana Agricultural Experiment Station, read a paper recently before the Louisiana Sugar Planters Association, on "The Intelligent Management of Plantation Stables." It has been published in pamphlet form, and makes a neat little brochure of twenty pages.

ABSTRACTS FROM EXCHANGES.

ENGLISH REVIEW.

By Prof. A. LEAUFARD, M. D., V. M.

FRACTURED FIRST RIB [*W. E. Joss, F. R. C. V. S.*].—The record of two cases where the symptoms were very different. In the first case the following were observed: The animal was standing with near knee flexed, toe resting on the ground about on a level with the other foot, elbow very much dropped and there was a large hollow over the great triceps muscle. The horse could put no weight on the leg, and in trying to do so sank down until his sternum nearly touched the ground. He could extend the leg, and neither manipulations nor pressure over the anterior rib caused any pain. He was kept three weeks and then destroyed. He had a comminuted fracture near the head of the bone with very little attempts at repair. . . . The second case is that of a mare that became lame after a jump. She walked sound but trotted lame on the off fore leg. She had a short step and slight dragging action of shoulder lameness. There was pain in flexion and extension. Treated for ten days, she seemed to recover and went exercising. Two days later she fell, cut her knees, was laid up; put at work again, had another accident, injured herself so badly that owner had her destroyed. She had a fracture of the first rib, with a good deal of bony deposit around the ends of the broken bone.—(*Veterinary Record, April.*)

A CASE OF OBSCURE LAMENESS [*E. Wallis Hoare, F. R. C. V. S.*].—A four-year-old gelding is bought with certificate of soundness. After a few weeks, after a run, he is stiff behind. This condition increases. After a long day of work he shows marked lameness in the near hind leg and a peculiar dragging action in the quarter. The next morning he is perfectly sound in his gait. And thus the case kept up for a few weeks. Talking with another veterinarian about the case, this latter gentleman suggested that a bad fitting saddle might account for the trouble. At the next visit, the author examined the saddle and found that it fitted very badly and pressed in an uneven manner on the near side of the loins. The smallest pressure on that region was very painful. A new well-fitting saddle settled the

condition by the disparition of the lameness.—(*Veterinary Record, April.*)

FRACTURE OF THE ARYTENOID CARTILAGE [*J. B. Wolstenholme*].—A mare had developed severe roaring since three months. Her health has been very good all along and she was able to do light work. As the roaring was very loud, and the animal being quite old, no treatment was recommended and she was destroyed. On dissecting the larynx, it was found that the roaring was due to a fracture of the left cartilage with tumefaction of the mucous membrane. There was considerable venous congestion, but the dilator muscles were found normal in size and in color on both sides of the larynx. The glottal opening was much diminished and unsymmetrical. The fracture was about half an inch from the anterior border and extended the full width of the cartilage. This anterior portion had become reunited to the remaining cartilage, but at a right angle and in such a manner as to obstruct the lumen of the glottis.—(*Veterinary Record, April.*)

RABIES IN A GOAT [*Chas. W. Pate*].—A goat was bitten by a rabid dog, but showed no symptoms of rabies for thirty-six days. The dog also bit a woman and some fowls. These died soon after, but the woman being cauterized has so far escaped the disease. The goat was bitten at the root of the tail, the right flank and the sheath of the penis. The symptoms observed were as follows: Much bleating, animal seemed in pain and appeared to strain much as if constipated, but defecated and urinated without difficulty. Abdomen was very tender to the touch and the animal attempted to bite and butt, if one touched it. Appetite good, animal ate small pebbles, sand and other foreign bodies. He was constantly biting his wounds and more particularly the sheath of the penis. Temperature 105-6° F. On the second day he had paraphymosis and voided urine with difficulty. He tried to butt and gore a stone thrown to him; he also snapped at the end of a stick used to draw his attention. He had the characteristic vacant stare of rabies. The tongue was soiled and slightly protruding. After two days he refused food, drank a little water. The animal got hoarse and its bleat sounded like the bark of a dog. When he laid down, he did not do it on his knees first, but fell on his haunches and then laid on his side. He died after three days of sickness. Nothing particular was found at the post-mortem. Inoculation of its medulla to a rabbit confirmed the diagnosis.—(*Veterinary News and Jour. of Tropical Veterinary Science.*)

A LEIOMYOMA OF THE TERMINAL PORTION OF THE ŒSOPHAGUS IN A DOG [*A. E. Mettam, M. R. C. V. S.*].—Irish terrier, 12 or 13 years old, had enjoyed good health up to a fortnight ago. He vomited freely and showed weakness of the hind legs. He had a peculiar staring appearance, pupils dilated, neck stretched and fixed. To all appearances was blind, as he knocked against every object in his way. Sedatives failed to stop the efforts at vomiting. The dog was destroyed. The post-mortem showed that the stomach was pressed against the diaphragm and a firm body as big as a ball could be felt between the stomach and diaphragm. The growth involved the termination of the Œsophagus as it enters the stomach. Its thickest part measured three inches. The tumor was of a pale pinkish grey color and on section showed a number of whitish specks like plaster. In structure it was a leiomyoma.—(*Veterinary Journal, April.*)

CANTHARIDES POISONING IN A HORSE [*Herbert King, M. R. C. V. S.*].—A gelding was convalescent from pneumonia, but being somewhat constipated, orders were given that half a pint of linseed oil be administered. Through mistake he received half a pint of a mixture made of linseed oil 5 ounces, oil terebinth. 5 ounces, and cantharides powder 14 drachms. The results were: Mouth and lips much blistered, animal distressed, blowing and passing large quantities of urine, pulse was frequent, quick and feeble. No particular abdominal pains were exhibited. Mouth and throat very sore, great dribbling. Excessive soreness of the neck and along the Œsophagus. All food refused except later, when the animal took some gruel. The urine soon became bloody and slight abdominal pains manifested themselves. Death occurred on the tenth day. Post-mortem: Kidneys much inflamed and with large abscesses. Bladder had some large hæmorrhagic spots. Stomach ulcerated.—(*Veterinary Journal, April.*)

SARCOMATOUS TESTICLE IN A DOG [*H. Gibson, M. R. C. V. S.*].—Fox terrier had a large swelling in the perineum, which looked like a scrotal hernia. It was soft, but along the prepuce contained a large hard lump. Chloroformed for operation. When the swelling was punctured a pint of blood escaped, and on opening it up a hard mass was found. It was the testicle, which was removed with the ecraseur. The organ was as big as one's hand closed, and when examined with the microscope it proved to be a sarcomatous degeneration of the organ.—(*Veterinary Journal, April.*)

NOTES ON TWO CASES OF RUPTURED TRACHEA [*S. H. Gaiger, M. R. C. V. S.*].—The history of a dog whose body became enormously swollen and puffy, due to subcutaneous emphysema. His nose poked out, his four legs were stuck outwards, and the animal was unable to stand on them. With an incision made in the skin of the neck, most of the air could be squeezed out by pressure, but as soon as this was stopped, the swelling would return at once. The dog died from suffocation. Post-mortem: All the tissues of the neck dissected were infiltrated with air, and muscles, arteries, nerves, trachea and oesophagus dissected out. The trachea was found ruptured half way between the larynx and the first rib. In the second case the lesions were found in the thoracic portion of the trachea. The case occurred in a sheep and was found badly infected with *Echinococcus polymorphans*.—(*Veterinary Journal, April.*)

GUT-TIE IN CATTLE [*W. W. Grasby and S. Reynolds, M. R. C. V. S.*].—A quite interesting history of 13 cases of the trouble in cattle, with the excellent results obtained by the authors with a simple surgical operation. In the presence of the various abdominal symptoms presented by the animals, colics, constipation, rectal examination, etc., an operation was decided upon and performed as follows, after all antiseptic precautions were taken: "The incision is made high up in the right flank, and the skin is cut smartly, this being the part of the operation where the greater sensation is shown. The wound is made sufficiently large to admit the hand and arm, and while exploring the abdominal cavity the operator has a clean piece of linen, soaked in carbolic solution, wrapped around the arm just above the elbow, as an additional antiseptic measure. The strangulated portion of the bowel is, as a rule, easily found and the cord constricting it feels to the fingers like a fibrous band, no doubt the peritoneal covering of the spermatic cord. It is rather tough to cut and the instrument used for the purpose is a curved hook-bladed knife. The external wound is sutured and a broad bandage applied around the body." Of the 13 cases recorded, five operated upon recovered, six were slaughtered without operation and two died from complications which rendered interference useless.—(*Veterinary Journal, April.*)

A CASE OF STRYCHNINE POISONING [*George McCall, M. R. C. V. S.*].—The history of a fox terrier which exhibited symptoms of strychnia poisoning and was treated with chloro-

form inhalations and apomorphine first. Later on he received hydrochlorate of morphine, which was repeated three times, and finally recovered.—(*Veterinary Journal, April.*)

OBSTETRICS IN THE MARE [*Anton Tapken, Official Veterinarian at Varel*].—This article is a translation from the *Monatshefte für Praktische Tierheilkunde* by Prof. W. L. Williams, N. Y. State Veterinary College. The article refers principally to the various anomalies in dystokia that one may meet with in practice and which are principally presented as the result of feeble labor pains, version of the uterus, torsion of the uterus, deviation of the head, dystokia due to flexure of the posterior limb, breech presentation, etc. The article is illustrated with a number of plates. Demonstration is given by the history of cases in several of the conditions alluded to, and the translator, who is, we all know, an expert in obstetrics, has added a number of notes and comments of great value.—(*Veterinary Journal, April.*)

GERMAN REVIEW.

By J. P. O'LEARY, V. M. D., Bureau of Animal Industry, Buffalo, N. Y.

BACTERIA IN THE HEALTHY BODY TISSUES AND THEIR PORT OF ENTRY [*Dr. Selter, Bonn*].—According to the investigations of S., the lung, as a general rule, cannot be considered as a germ-free organ. Frequently spore-forming bacteria are found in it. Beside these, we also find pneumococci and other virulent bacteria. Violent inspirations may dislodge small particles containing bacteria from the oral mucous membrane and bring them into the peripheral parts of the lung. In the act of mastication or deglutition bacteria may be detached from the oral mucous membrane and be transported into the lung during inspiration. From the lungs the germs gain the bronchial glands. The liver, spleen, kidneys and blood are germ-free under normal conditions. The macroscopical intact intestinal wall is not wholly germ-proof. The perforating bacteria are held in check by the mesenteric lymph glands; also bacteria pass through the unabraded skin, the author states, but these are caught up by the subcutaneous lymph vessels. The fact that the organs and blood are free of bacteria is not altogether due to the impenetrable structure of the lung tissue, intestinal wall and skin, but rather to the imperviousness of the mesenteric and other lymph glands.—(*Zeitschrift für Hygiene.*)

AN ENORMOUSLY ENLARGED SPLEEN IN A HORSE [*Abattoir Vet. Brandenburg, Kattowitz*].—B. reports that whilst engaged at his customary duty of meat inspection in the abattoir at Kattowitz, he found a spleen in a horse which differed considerably from the normal spleen. The organ weighed 35 lbs., or, in other words, it was from 10–12 times the weight of the ordinary spleen of a horse of the same size. In length it measured 79 cm. (about 31 inches), width 44 cm. (18 inches), maximum thickness 10–11½ cm. (4⅓ inches). The horse was a brown gelding, a light wagon horse, in fairly well nourished condition, about twenty years old, weighed about 800 lbs., and showed during life no symptoms of disease; on post-mortem examination no other lesions were discernable. The spleen itself was fairly rich in blood and somewhat dark in color. Apart from its extraordinary size and abnormal weight, the organ did not present any deviation in form or structure from a normal spleen.—(*Berliner Tier. Wochen.*, No. 51, Dec. 20, 1906.)

DISEASES OF THE NAVEL IN FOALS AFTER BIRTH [*Ed. Mieckley*].—After a brief *résumé* of the anatomical and physiological relations of the placenta and umbilical cord, Mieckley next takes up the diseases of the navel in the following order: (1) Umbilical hæmorrhage. This is a very rare disease, which occurs a few hours after birth, the blood escaping in a thin stream or in drops. As to the cause, from the cases under observation, it is possible to ascribe as a factor that there exists an extreme flaccidity of the muscular coat of the artery which hinders its closure. The foals in question are to be considered as born with a weak constitution. (2) Escape of urine in drops, due to insufficient closure of the urachus. These conditions are amenable to treatment; through the use of astringent dusting powders, in a short time a cure is effected. (3) Tumefaction of the navel. This appears a few days after birth; the swelling may attain the size of a hen's egg, is œdematous and slightly painful and is confined solely to the subcutaneous connective tissue. Treatment.—The application of a discutient remedy, as tincture of iodine, or it may heal through suppuration. (4) Inflammation of the navel. This is a very common disease, of which there are three kinds; the first is nothing more than a mere thickening of the cord accompanied by slight pain; only that portion of the cord exterior to the abdominal wall is affected. Treatment consists in the application of iodine preparations, absorptive remedies and alkaline soaps. The second is a less favorable malady. A suppurative throm-

bosis of the umbilical vein takes place; in this instance the pathological process extends only to the umbilical opening. The remedy most suitable in this case is section of the umbilical vein and ligating the stump of the cord. A cure is usually effected in about ten days. In the third kind the suppurative process extends to the abdominal cavity; the disease not only affects the vein, but also the artery. This form usually terminates fatally. Treatment is of no avail (even the intravenous injections of collargol). On post-mortem examination we find enlargement of the mesenteric glands, abscesses in the liver, and embolic nodules in the lungs. The lesions present are those of a general pyæmic infection, which, according to Mieckley, may be confounded with the disease "Füllenlähme, pyæmic arthritis." In opposition to the views of Bollinger, Frank and others, the author asserts that the so-called Füllenlähme is an infectious disease, which attacks the young *in utero* and is not solely dependent upon umbilical infection. In order to verify his opinion, M. refers to the post-mortem lesions, which have nothing in common with pyæmia. That complications of the two diseases may occur is a matter of course. (5) Omphalocele. This usually occurs through rupture of the navel during the separation of the cord. Frequently there exists a peculiar muscular weakness present, which is hereditary and which does not permit sufficient closure of the umbilical ring. The smaller hernias frequently heal spontaneously; the larger require surgical interference. For treatment, the latter necessitate the use of applications of strong corrosive acids, vesicating ointments, or compression plasters or trusses; finally an operation. In the absence of complications, Mieckley recommends the use of ligatures.—(*Zeitschrift für Gestützkunde*, 1906, 7 Heft.)

INVESTIGATIONS REGARDING AN INFECTIOUS-LIKE DISEASE IN THE MOUTHS OF CATTLE ("Gutartige Maulseuche;" "Stomatitis Papulosa Bovis Specifica") [*Prof. Ostertag and Dr. Bugge*].—Ostertag and Bugge had occasion to study an infectious disease of the oral mucous membrane which had appeared among Bavarian cattle. They took the material for investigation from one of the animals at hand. The excised pieces of mucous membrane were transplanted into pockets formed on the inferior surfaces of the tongues of 5 calves. 13 days after the ingrafting, small red spots appeared, scattered over the mucous membranes. Further it was found possible to transmit the disease by means of the blood and filtered blood

serum. Older animals were more difficult to infect than younger. That spontaneous transmission takes place between animals was demonstrated by the fact that when 5 uninoculated healthy calves which had stood in the same stall with the 5 infected calves, four contracted the disease. Clinically the disease is characterized as an apyretic circumscribed stomatitis, accompanied by the formation of small nodules with inflamed bases. The degenerated epithelium is exfoliated at points, leaving behind small sharply-defined circumscribed ulcers. The disease may be prolonged for months. Stomatitis papulosa infectiosa may be confounded with sporadic aptha and with foot-and-mouth disease. It differs from both these diseases through lack of vesicles, and besides from foot-and-mouth disease by being limited to the oral cavity, skin and claws not being affected.—(*Zeitschrift für Inf. Krank. par. Krank. und Hygiene die Hausture, Bd. I., S. 3.*)

FRENCH REVIEW.

By Prof. A. LIAUTARD, M. D., V. M.

A NEW CASE OF AUTO-MUTILATION IN A DOG [*P. Charitat*].—An eighteen-months-old female collie has just recovered from an attack of distemper, but has yet a marked weakness behind. Brought to the author, he notices that the tail is much swollen and the hairs are stuck together with moisture. The animal has a great tendency to bite her tail with rage. Indeed after clipping the hairs, the tail appears covered with gangrenous spots here and there, upon a space of about 10 centimetres. Above and below the skin is normal. Free incisions are made and antiseptic applications prescribed to be made frequently. Between 150 and 200 points of actual cauterization are applied to combat the myelitis. The next day the animal seems to walk better, but the gangrene has spread. There is great itching. Amputation of the tail is performed, and the animal secured in such a way that she cannot bite herself. Notwithstanding she is found the next day covered with blood. The wound measures 10 centimetres in length; the last vertebrae are amputated; the spinal marrow is exposed; the anus entirely destroyed and the rectum is widely open. After tightly securing her, the animal is submitted to serum and caffeine, oxygenated water dressing and heavy feeding. At first things seem to go on well,

but, all of a sudden, the bad symptoms reappear and the poor brute is destroyed. The case was one of typical auto-mutilation, whose cause was unexplained.—(*Record de Médecine Vétérinaire.*)

SUB-CAPSULAR CYST OF THE KIDNEY IN A PIG [*E. Thirion*].—A lesion found in a slaughter-house. A pig prepared for the butcher has in the greasy mass covering the right kidney a development more marked than on the other kidney. It is constituted by a round tumor, soft and rosy in color. It is a cystic kidney, weighing 3 kilogs 500 grammes (say seven pounds) while the organ of the opposite side weighs only 220 grammes.—(*Rec. de Méd. Veter.*)

TREATMENT OF NAVICULAR DISEASE BY LIGATURE OF THE DIGITAL ARTERY [*M. Georges Dumas*].—Remembering the case that had been already recorded on the subject, the author promised himself to try the treatment on the first occasion. This is the record of his case. A horse, aged twelve years, has navicular disease of both fore feet. The diagnosis has been confirmed with cocaine and the animal has been submitted to all kinds of treatment. Dumas, fearing a failure with neurotomy, decides to try the ligature of the digital artery. The animal is thrown and the internal digital artery of the left leg is ligated. As soon as the animal is up, instead of improvement, he shows a great deal more lameness, to such extent that he cannot stand on his leg. The next day he is perhaps better, but yet very lame. After ten days the wound is all healed. He is improved some and this condition gains little by little, although the lameness is yet much marked and he is unfit to work. He is then turned out and from week to week he gets better, until after three and one-half months of rest, he is entirely well and able to resume his work, which he keeps up, although it is very hard. Conclusions: Ligature of the digital artery ought to be recommended, when neurotomy cannot be performed. Increase of the lameness after the application of the ligature is not alarming; the symptoms diminish and pass away after a varying length of time.—(*Revue Générale de Medec. Veter.*)

THE USE OF ASPIRINE [*Mr. Mouquet*].—The analgesic, antirheumatismal and antithermic properties of aspirine are well known, but it is as an antithermic preparation that the author has resorted to it, in one case of pneumonia and one of influenza, to test the antithermic properties in comparison with those of quinine, which he has been in the habit of using. In the two cases the aspirine was given mixed with honey at the

dose of 20 grammes in fractions of 5 to 7 grammes, about two or four hours apart, in such a way that the whole dose was taken before the stage of exacerbation in the temperature. Given in a different way, the result is not as satisfactory. The dropping in the temperature has varied between one and two, or even more degrees. The author has also tested the anti-rheumatic properties in cases of rheumatoid synovitis following pneumonia, but the results are too incomplete to be taken in consideration, for the present at least. Tested by other practitioners the results did not prove as satisfactory as with the author, who, however, is far from attempting to present aspirine to take the place of quinine, so extensively used.—(*Bullet. de la Soc. Cent. de Méde. Vet.*)

INTESTINAL OBSTRUCTION BY A LARGE OVARIAN CYST IN A MARE [*Mr. Jacoulet*].—"Victoria," a seven-year-old mare, has never been very sick and has done pretty regular work, when she is taken with colic and symptoms of obstruction, rapidly complicated with congestion, which cannot be relieved, and she died. At the autopsy, there was extensive distension of the different parts of intestinal tract, with marked disseminated congestion and packing of partly digested food in both colons. There were no peritoneal lesions. The pelvis was completely filled with an enormous cystic tumor of the left ovary. This neoplasm was slightly oval and bosselated in shape; it was unilocular, with thick walls, and contained four litres of clear citrine liquid. The tumor weighed 5 kilogrammes, and pressing on the rectum against the sacrum. In front of it the rectum was full of matters pressed and adherent to the mucous membrane. The bladder was empty. It was regrettable that rectal examination had not been made to establish the diagnosis and surgical interference resorted to either in the shape of laparotomy or through the vagina, as in normal ovariectomy.—(*Bull. de la Soc. Cent. de Méde. Veter.*)

INTESTINAL PERFORATION AND ABNORMAL ANUS IN A MARE [*P. Vautrin*].—The subject of this observation is an Anglo-Arab mare, nineteen years old, that had never been sick. She was used by an officer in the army, who rode her very hard. The last day she was ridden she surprised her owner by jumping across a wide ditch. The second day after, she had in front of the udder a small swelling, flat, œdematous, which is attributed to a prick of some sharp body and considered as of no account. The mare had had an umbilical hernia treated with nitric acid and the skin of that region was hairless and

white. After a week the swelling remained the same and the mare was worked. Later on the tissues around the swelling became harder and the centre rather soft. Fourteen days after the first manifestations, this soft spot had ulcerated and on a level with the umbilicus there was a wound with turned edges, from which escaped liquids having a very bad odor. Around the wound, there was undermining of the skin, which was loose and formed a pouch with an infundibulum, formed by the abdominal wall. A strong odor of gangrene came from that opening. Washing injections made in these brought out alimentary substances and small pieces of hay and also seeds of oats. It was evident that there had been an intestinal tear, independent of the abdominal cavity and adherent to the wound of the abdominal wall. It was a true accidental anus. The mare kept on eating and drinking, although liquids escaped more or less through the ventral opening, when she walked. Taking in consideration the age of the animal, the fact that the trouble had already existed several days and that the anus was comparatively old, no attempt was made to treat her. At the post-mortem, besides the presence of more or less food *débris* found under the skin, there were evidences of local gangrene of the surrounding tissues. The hernial sac was found perforated with two symmetrical openings. A loop of small intestine was attached by its great curvature to the umbilical region by a thick fatty peduncle. This involved the anterior part of the duodenum at about one metre of the pylorus. In its internal face, there was a round opening and it looked as if through it the mucous membrane had passed and formed a hernial pouch as big as a small orange. This pouch has two tears, one at each extremity of its great diameter, and it is through these that the escape of the intestinal contents could take place.—(*Revue Générale de Méde. Veter.*)

DR. J. A. BARNETT, Edwardsville, Ill., has been elected Circuit Court Clerk of Madison County.

THE REVIEW IN AUSTRALIA.—“I must take this opportunity to say a word in favor of the REVIEW. I have been a subscriber for the past two and a half years, and now would not be without it for any consideration. I cannot speak too highly of the excellent articles, reports of cases, etc., that I have read in the REVIEW, nor can I say how much help it has been to me in my practice. May its pages never grow less.—(*Gus White, G. M. V. C., Kyabram, Victoria, Australia.*)

ARMY VETERINARY DEPARTMENT.

PRELIMINARY REPORT OF THE ARMY LEGISLATIVE COMMITTEE OF THE A. V. M. A.

Doubtless the army veterinarians and those greatly interested in their welfare, which really means the welfare of the entire profession, professionally and socially, are wondering what the Committee on Army Legislation of the American Veterinary Association has been doing this winter, and why they have been so silent.

The fact of the matter is, this committee has been very active and has done everything in its power to advance army legislation, but it has not been using its ammunition when the enemy has been out of sight.

When your committee was appointed, it started the work in hand by first thoroughly analyzing "the bill to increase the efficiency of the veterinary service of the army," remembering the old adage, "Beware of the Greeks bearing Presents."

A bill drawn and approved by the War Department on any veterinary matter pertaining to the Army will bear careful scrutiny; such is the opinion of those who have watched the constant efforts of the War Department to prevent certain very necessary Army veterinary legislation for 20 years.

To begin with, a grave suspicion arose in the minds of the committee relative to the reappointment of those veterinarians now in the service, as provided in this act.

Sec. 2, of this act prescribes for an examination as to the habits, moral character, mental and *physical* ability of veterinarians who seek appointment under this act.

Sec. 5, provides that veterinarians having 15 years' service shall be first eligible for appointment and may be appointed without examination, and if within this description and having reached 64 years of age, shall be appointed and retired.

Sec. 6, provides for the men having less than 15 years' service, who shall be appointed subject to examination as provided by this act (*Sec. 2*).

Sec. 8, provides that veterinarians now in the service who shall not be appointed under the provisions of this act shall be discharged from the Army with three months' pay.

In other words, it seemed clear to the committee that any

veterinarian now in the Army, with less than 15 years' service, must pass this examination as to mental and *physical* ability before he can be reappointed, and should he fail physically, he would be discharged from the Army with three months' pay.

Having been informed by an Army veterinarian that there were at least three veterinarians in the service, having less than 15 years' service, who could not pass a physical examination on account of wounds, accidents and diseases contracted in the line of duty, it seemed of vital importance that these men, among whom are some of the brightest men in the service, should not be ruthlessly thrown out of the Army with three months' pay.

If the committee has been misinformed regarding these men, it begs leave to be corrected.

Thinking that we might have misconstrued the bill, we called upon an officer of the General Staff of the Army, who stated that our construction of the bill was correct. Then we proceeded to the Surgeon-General's office and asked whether they would pass physically, certain veterinarians of the Army, naming their alleged unsoundness (one having lost a leg in the service), and were informed that men having such physical ailments could not be passed.

The Judge Advocate General of the Army was then interviewed, the conditions explained to him, and his opinion was:—"That any veterinarian now in the service, who had less than 15 years' service, who did not pass the examination (including physical) as prescribed by this bill, would be discharged with three months' pay, unless the President waived such physical examination." Knowing what pressure was necessary for the latter we saw at once that an injustice was being perpetrated on the younger men in the service; men who have passed a severe mental and physical examination before their appointment and who are to-day the backbone of the service.

We then sought the aid of Congress to overcome this wrong.

Senator Warren, of Wyoming, the Chairman of the Senate Military Committee, saw at once the error of the General Staff and the injustice of this bill, but he explained how difficult such a matter was to correct on the floor of the Senate.

He stated he would do his utmost to correct the defect in this bill and would endeavor to have the following clause inserted after Sec. 6 of this bill: "If found disqualified for active service on account of wounds or disability incurred in the line of duty, their cases shall be disposed of in conformity with

the requirements of Sec. 3 of the Act approved October 1, 1890" (26 Stats., Pg. 562).

He stated that the bill had very little or no chance to be considered during the present session.

Your committee then sought the assistance of that steadfast friend of the Army veterinarian, Ex.-Gov. J. A. T. Hull, of Iowa, the Chairman of the House Committee on Military Affairs. He had not noticed this dereliction in the bill, as prepared by the General Staff, but readily consented to add the clause previously referred to. This clause would retire on three-fourths pay, any veterinarian, now in the service, who failed to pass the physical examination, provided that such physical disability was contracted in the line of duty. He stated to your committee that we were only wasting our time at this session of Congress, since no military legislation would be considered, save the Artillery Reorganization Bill, and on his advice we discontinued our active work at the Capitol.

His advice and prediction later proved to be correct. Several personal interviews with Capt. Hull have interested him in this bill and we feel that we have in him an active and valuable helper in our undertaking.

Believing that if the clause we had insisted on having added to the bill, was endorsed by the War Department it would be more effective, the following letter was written to the Secretary of War:

February 2, 1907.

"Hon. W. H. Taft, Secretary of War, Washington, D. C.

"SIR:—On behalf of the American Veterinary Medical Association, I beg leave to call your attention to S. 3927, a bill 'To increase the efficiency of the veterinary service of the Army,' and to point out the injustice which would be done to several of the best veterinarians in the Army, if this bill, in its present form, became a law.

"No doubt this point was entirely overlooked by the General Staff in the preparation of this bill.

"Section 2 provides, among other qualifications, that each veterinarian shall pass a satisfactory examination as to habits, moral character, mental and *physical* ability, etc.

"Section 5 provides that veterinarians with fifteen years' services shall be first appointed without examination and if sixty-four years old and within the fifteen-year clause, shall be appointed and retired.

"Section 5 provides for the examination and appointment *after examination*, of those men with less than fifteen years' service, but makes absolutely no provision for those men with less than fifteen years' service, who may be physically disqualified before a Board of Army Surgeons for *physical* disabilities contracted in the line of duty. These men may, under this bill, pass the mental examination and those relat-

ing to moral character, professional qualifications and general fitness for the service, and no man now in the service objects to taking such an examination, but men who have served less than fifteen years, and who were required to pass a stringent *physical* and mental examination prior to appointment, object most strenuously to being thrown out of the service with three months' pay because they cannot pass the physical examination provided by this act.

"Dr. Lawrence, Veterinarian of Cavalry, lost his leg in the Philippines, by a horse falling on him, but he gallantly rides one-legged with his regiment. Dr. Hunter, Cavalry veterinarian, one of the most accomplished veterinarians in the Army, is now physically disqualified, I am informed. Dr. Gage, Artillery veterinarian, contracted amœbic dysentery in the Philippines and would probably be disqualified by this act.

"Surely, Mr. Secretary, you never meant to endorse this bill which will dismiss with three months' pay, some of the most accomplished veterinarians in the Army, and I am informed by prominent officers of the Army that such will be the case if this bill passes in its present shape. Senator Warren and Representative Hull were not aware of these conditions until I called their attention to this injustice and they are now in favor of making some provision for these men, but very much regret that it was not done by the General Staff in preparing the bill, for you well know, sir, the difficulty encountered on the floor of either house with amendments to bills.

"I beg leave to submit an amendment to Section 6 of this bill which I attach to the enclosed bills, and on behalf of the Army veterinarians and of the national body I represent, I trust you will endorse this amendment and forward the same with a favorable report to both the Military Committees. I am, sir, Very respectfully,

"J. P. TURNER, V. M. D.,

*"Chairman Committee on Army Legislation,
American Veterinary Medical Association."*

His answer, which doubtless will be interesting reading to the Army veterinarians, is herewith appended. It will greatly surprise many Army veterinarians, who were stripped and required to do recruit stunts, to know that they evidently were not examined physically.

It seems strange that the War Department would accept men without knowing whether they had two legs or eyes or whether they had hæmorrhoids, knowing that they were to enter the mounted service.

It may be that these physical records are missing, but we personally know that a very severe physical examination was given the first class examined and several men were disqualified on account of physical defects, one, a student of your Chairman, was rejected physically, but was later accepted after undergoing a severe surgical operation to remove such disability. This young man will hardly agree with the Secretary of War's statement regarding a physical examination.

"WAR DEPARTMENT, WASHINGTON, February 12, 1907.

"*Dr. John P. Turner, V. S., 918 O St., N. W. Washington, D. C.*

"SIR:—I beg to acknowledge receipt of your communication of the 2nd instant, inviting my attention to Senate 3927, a bill 'To increase the efficiency of the veterinary service of the Army,' in which you point out an apparent injustice to two veterinarians of Cavalry and one of Artillery now in the service.

"In the original draft of this bill careful consideration was given in the interest of all concerned as to length of service that should act as a waiver of the examination. This length of time was determined as fifteen years. The record of Dr. Lawrence shows that he was appointed April 25, 1903; Dr. Hunter, July 25, 1900, and Dr. Gage, January 27, 1903. It will therefore be observed that their length of service falls far short of that considered proper for a waiver of examination at the time the bill was drawn. The records also show that no physical examination was required on entering the service, and it therefore cannot be known whether they were physically fit at that time or not.

"For the reasons above stated, therefore, it is not deemed wise to recommend the adoption of the amendment as proposed in your letter.

"*I F. B.*

"Very truly yours,
WM. H. TAFT,
Secretary of War."

This committee has received many letters from veterinarians personally interested in this bill urging us to have it enacted into law as drawn by the General Staff. We believe, however, that we have been acting in the best interests of all concerned.

The following account of a banquet given by the "Veterinary Medical Association of the District of Columbia," May 25, 1907, may prove interesting to Army veterinarians:

"The initial banquet of the Veterinary Medical Association of the District of Columbia was held at the Hotel Dewey Saturday night. The recent legislation governing the practice of veterinary surgery in the District, and the prominent position this profession has acquired were the themes enthusiastically discussed. More than fifty members of the association and their guests, including the Secretary of Agriculture and Representative J. A. T. Hull, were present.

"The action of the Fifty-ninth Congress in enacting the law regulating the practice of veterinary surgery in the District, restricting it to only legitimate veterinarians, and creating a board of examiners to enforce the requirements, was referred to in most complimentary terms by the speakers. With such legislation and the support of Congress, and of such men as Secretary Wilson, who is known as a firm believer and ardent advocate of legitimate veterinary practice, the members of the association predict a great future for the profession.

"'This law will do one thing, if nothing else,' said Dr. John P. Turner, who presided as toastmaster, in his opening remarks, 'and that is it will give the worthy practitioners their chance, and will relieve the public of frauds and quacks, thus uplifting the profession.'

"Among the other prominent guests present were Dr. Harvey W. Wiley, Chief of the Bureau of Chemistry, Department of Agriculture;

Dr. William C. Woodward, health officer of the District ; Dr. A. D. Melvin, Chief of the Bureau of Animal Industry, Department of Agriculture, and Dr. Charles W. Stiles.

"In response to an introduction as 'the greatest friend of the veterinarians,' Secretary Wilson replied that he is interested as much in the cause and advancement of this profession as are the members of the association themselves, and whatever he had done in the interest of the profession toward securing legislation had been done with a selfish motive. He had for a long time appreciated the fact, he said, that his department is in sore need of the most skilled and best educated veterinarians that can be obtained, and this was one of the ways of getting them.

"Mr. Wilson said he regretted the fact that the War Department has not done more for the profession by bettering that branch of the Army. 'I am informed,' he said, 'that many of the veterinarians of the Army are an inferior lot. This should be remedied by giving inducements to legitimate veterinarians to join. They should be commissioned and paid the same as other officers of the Army, as is done in the foreign countries.'

"Representative Hull, who is chairman of the House Committee on Military Affairs, prompted by Secretary Wilson's uncomplimentary reference to the veterinarians of the Army, took up the cudgel in defense of the latter, and stated that the Army requires applicants for such places to be graduates from some veterinary school or else a legitimate practitioner with several years of experience, and as a result the force is able and efficient, and for its size compares favorably with that of any of the foreign nations. He admitted, however, that the veterinarians in the service should be commissioned, and ventured the opinion that it would not be difficult for the members of this association to secure the enactment of a law authorizing it at the next session of Congress.

"Others who spoke were Dr. Wiley, Dr. Woodward, Dr. Stiles, Dr. C. B. Robinson, District veterinarian ; Dr. Melvin and Dr. Hulbert Young, President of the association.

"The members of the association present were: Drs. Blume, Buckingham, Turner, Collins, Young, Robinson, Rome, Melvin, Stiles, Farrington, Hungerford, Pearson, Washburn, E. S. Wolner, M. Wolmer, Frey, Mitchell, Weeks, Yetton, Shelby, Stafford, Wootten, Summers, Linberg, Keifer, Hickman, Heidie and Turner."

In taking up the defense of the Army veterinary service, Representative Hull, Chairman of the House Committee on Military Affairs, spoke warmly in favor of the Army men, stating that, with the exception of two or three old non-graduates, who had rendered long and faithful service, the Army veterinarians were a most excellent and deserving class of officers and plainly stated in the most frank manner that the Army men should take courage, that better days were in store for them, inasmuch as Congress intended to make them commissioned officers and would, most likely, form a veterinary corps, with a head to it.

Representative Hull further stated that such a corps, on account of its small size, could not expect very high rank at present, but that sufficient rank and promotion would be given to encourage the best men to enter and remain in the service and that their chief would be given rank commensurate with his command.

This statement by Representative Hull was received with loud and long applause.

In fact, the object of the banquet, the recent enactment of an excellent law regulating the practice of veterinary medicine in the District of Columbia, seemed to be entirely forgotten by many of the leading speakers, including Secretary Wilson and Captain Hull, as most of the remarks were on the subject of army veterinary legislation, showing that there certainly will come some reward to our gallant *confrères* of the Army, who have so long and faithfully fought for proper recognition by Congress.

Too much stress cannot be put on Secretary Wilson's strictures on Army veterinarians since practically his entire speech was devoted to stating how interested he was in giving the veterinarians the same recognition in the Army as they had obtained in the Department of Agriculture.

The B. A. I. veterinarians present learned of the high and lofty respect and admiration Secretary Wilson had for "his boys," as he affectionately referred to them.

Your committee will always be glad to hear from Army veterinarians, who can ably assist us with much good advice.

The bill to increase the efficiency of the Army veterinary service and a report on the same is attached hereto.

Very respectfully,

JOHN P. TURNER, V. M. D.,

*Chairman Committee on Army Legislation, American Veterinary Medical Association,
916-918 O St., N. W., Washington, D. C.*

IN the course of a descriptive article of the Dominion Department of Agriculture, in a recent number of the *Farmer's Advocate*, of Winnipeg, Manitoba, the Health of Animals Bureau is most highly commended for its efficiency and accomplishments. An excellent portrait of Veterinary Director-General J. G. Rutherford is included, and the veterinarian in general is placed in an enviable light. Veterinarian A. G. Hopkins, editor-in-chief of the *Advocate*, has done a great deal toward advancing the interests of his profession through the medium of his excellent publication.

THE EFFECT OF A REMEDY AND A STOCK FOOD ON A DAIRY PRODUCT.

By DR. E. O. HESS, Elyria, Ohio.

On the evening of the 2d of July, 1906, complaint was made to the Sanitary Police, the officer of our local Board of Health, of the milk delivered by a certain milk dealer of our city. Upon the advice of this officer, milk delivered upon that evening and the two subsequent deliveries were brought to his office for investigation and chemical test, to detect any preservatives that might have been added on account of the extreme heat prevailing at that time. A meeting of the Board of Health was called to determine what to do. It was decided at this meeting that the services of a graduate of the science of agriculture, as taught by Ohio State University, be enlisted in testing the samples under suspicion. A test was made by him for formaldehyde or other deleterious adulterants. He reported to the Board the finding of a large quantity of formaldehyde by both the salicylic and sulphuric acid tests. Relying upon his report of the test, the Board ordered the prosecution of the dealer. Accordingly a warrant was issued for his arrest, charging him with adulteration of milk with formaldehyde. The arrest was made. Witnesses were subpoenaed for both the prosecution and the defense. The defendant pleaded not guilty. The prosecuting witness was called and testified that her attention was first drawn to the milk while serving the evening lunch, by an odor and taste, as she said, of iodoform. Another witness also testified that she had noticed the same smell but not the taste, and that she called up the first witness by telephone and asked her if she had noticed anything wrong with the milk. The first witness replied that she had, both in smell and taste, and that she had notified the Sanitary Police. The testimony of the witness who made the test, and upon whom the Board relied most for the conviction of the defendant, was that he had made the test of the milk delivered to him by the officer. The milk procured on the evening of July 3d showed very decided formaldehyde adulteration. The milk procured on the morning of July 3d under test gave negative results. He also tested all the samples for phenic acid, but found no trace of it. From this it was adduced by the Board

* Presented to the meeting of the Ohio State V. M. Association, January, 1907.

that the tests were true and that the adulterant was added only to the evening deliveries. Note this fact.

The defendant being called to the witness stand testified that there never had been to his knowledge any formaldehyde upon his place and certainly denied having adulterated the milk with anything. His wife was called and testified to the same fact, as did all the other attendants connected with his dairy who were at the trial as witnesses. During the examination of the defendant the fact was brought out that he had then and had had upon his place contagious abortion among his cows, and as a preventive and cure he had used for disinfecting purposes, phenic acid and chloride of lime; also that he had given his cows for some time "Cow Tone," a much-lauded sure preventive and tonic remedy for the cure of this and all other complaints. This remedy sold in open market is manufactured by Our Husbands Co., of Lyndon, Vt. He had, according to the testimony of the clerk of one of our local drug stores, procured on the morning of July 2d, a quantity of chloride of lime and a pint of phenic acid, as was shown by the records offered in court, kept by all druggists for recording the sale of poisons. The defendant in his testimony said that he had used on the day complaint was made all the acid and lime in disinfecting his stables. The presumption is that the odor of the combined disinfectants was absorbed by the milk and that this odor was that which first attracted the attention of the complaining witness to the milk. Had not the odor and taste been detected, the internal remedy might have been given indefinitely and the milk contained more or less formaldehyde so long as the "Cow Tone" was fed. I being subpoenaed by the defendant as expert witness, was asked this question: "Do you think it possible that the remedy given or that the disinfectants used would be absorbed by the milk during the act of milking, or that an amount sufficient in quantity to be detected by chemical test could be found in the milk from the remedy given the cows as a tonic?" After some hesitation, I replied, that milk readily absorbed odor, but having never given the subject serious thought, and having no recollection of any written authority upon the subject, I could not answer with definite accuracy about the internal remedy. but in my own opinion I thought it possible, but not at all probable. The Mayor, before whom the trial was held, after some discussion of the subject, said that it was most interesting, and as he did not wish to prosecute and ruin the character of any man not guilty of an offense, especially where

there was doubt, continued the trial to give both parties to the action a chance for more definite preparation for the trial. After the trial, the question asked of me and which I was presumed to know, set me to thinking. I knew that to medicate the dam, gave results in the offspring when so desired. This being so, why then, might not the remedy given these cows be found in the milk. If this remedy produced the results proclaimed for it, must it not contain some disinfectant or germicide in large quantities? To determine the matter satisfactorily to myself, I enlisted the services of a dairymen who was seeking knowledge and heartily coöperated with me in the test by giving me the service of two cows. We procured from each of these cows samples of the milk before beginning the test. Of these a test was made for formaldehyde with both salicylic and sulphuric acid. The result was negative. Formalin added to these samples gave positive results. One cow was fed twice daily two tablespoonfuls of "Cow Tone." The other was given the same number of times daily the same amount of formalin diluted with one quart of water. The test was carried forward for thirty-six hours and samples of the milk taken at this milking from both cows and the two subsequent milkings were tested and each and all showed decided formaldehyde admixture. The milk from the cow given "Cow Tone" contained at least 25 per cent. of the sample formaldehyde shown by the characteristic brown or cherry discoloration as given by both tests. The milk from the cow given formalin showed some less per cent. This may be accounted for from the fact that the giving of formalin in such quantities caused decided systemic effect in the cow. It set up a gastric and enteric disturbance thereby lessening the power of assimilation, and absorption. The first samples of the milk procured after the administration of the "Cow Tone" were set aside without regard to temperature or light on the ledge of a west window in a brick block, receiving the rays of the sun and the heat of the building the whole afternoon to see how long it would remain sweet. Being in glass bottles, it was carefully observed at intervals of from three to four hours daily. The milk procured from the "Cow Tone" cow showed perceptible fermentation in about seventy hours after being drawn, while that of the formalin cow appeared in the same condition after the lapse of about eighty hours. What prevented fermentation?

This test I made out of my own curiosity to know should the question again ever be raised. I did not expect to use the

results obtained in the continued trial, and therefore made no secret of them. The prosecution hearing that we had made a test of this kind and fearing that we might use it in the defense, ordered the graduate who made the test to conduct a test of two or three cows with "Cow Tone," presumably to see if the result obtained by them from the feeding of this said "Cow Tone" would produce for them the same result it had for us. He found cows at two dairies, one at each, and conducted his experiments according to the printed directions and as the defendant had testified to giving it, being only one-half the amount given by us. At the resumption of the trial he was called to the stand and testified to the facts set forth above, and that a test of the milk by the same method as before used. The result shown on this milk was the same as that produced from the milk originally complained of. There was but one thing left for the prosecution to do and that was to dismiss the defendant and exonerate him from all blame for milk adulteration, even though the milk contained large quantities of formaldehyde as proven by the tests.

This is a question of grave importance. In the prosecution of the violators of the pure food laws, the defendant may be technically guilty but wilfully innocent. All cannot be so fortunate as to escape unjust punishment by mere accident leading to the truth. There is no limit to the abuse of the pure food law that may be had by the unscrupulous in adding to the food or water of dairy cattle, formaldehyde and other dairy product preservatives, as they may claim for the health of the stock, when really it is for the preservation of their product. Is this a violation, and is a man amenable to the law for so doing? How many of the ever-increasing number of cases of nervous prostration in the human family might be traced to the administration of nux or the alkaloid strychnia to a cow for a continued period, the same milk consumed by a highly sensitive constitution setting up nervous exhaustion from over-stimulation? How many gastric disorders might be traced to the long-continued administration of large doses of irritant cathartics? We, as veterinarians, should be most guarded in advising the use of milk from cows under treatment. I think this a matter for serious future consideration and research by veterinarians, physicians, boards of health, and especially legislatures, that it may result in the restriction of or, better, the prohibition of the use and sale of the thousand and one "sure-cure" and "cure-all" remedies and stock foods sold.

THE NEW PENNSYLVANIA MEAT INSPECTION LAW.

AN ACT

To protect the public health by providing for the prevention of the preparation and sale of meat and food products which are unsound, unhealthful, unwholesome, and otherwise unfit for human food; defining what shall be regarded as meat and meat food products; authorizing the appointment and compensation of local meat inspectors; authorizing the State Livestock Sanitary Board to enforce the provisions of this act, to make rules and regulations for its enforcement, and to appoint agents to assist in its enforcement; and to provide penalties for the violation or perversion hereof.

Section 1. Be it enacted, &c., That the State Livestock Sanitary Board is hereby authorized to organize and to administer, in accordance with the provisions of this act, a service for the purpose of protecting the consumers of meats from injury by diseased, contaminated, putrid, or otherwise unsound, unhealthful, or unwholesome meats or meat food products, unfit for human consumption. The State Livestock Sanitary Board shall formulate and promulgate rules and regulations for the disposal of the carcasses of diseased animals. So far as they are applicable and are approved, the meat inspection regulations of the United States Department of Agriculture may be adopted and promulgated by the State Livestock Sanitary Board.

Section 2. No person, firm, or corporation, or any officer or agent of such person, firm or corporation, shall sell, offer for sale, expose with intent to sell, or prepare for use as human food, any meat or meat product from an animal that is in such condition that its flesh is unsound, unhealthful, unwholesome, or otherwise unfit for human food. Nor shall any unsound, unhealthful, or unwholesome meat or meat product be sold, or offered for sale, or exposed with intent to sell, for use as human food, or be manufactured or prepared for use as human food.

The terms meats and meat food products, wherever used in this act, shall include and apply to all carcasses, or parts of carcasses, of cattle, sheep, swine, and goats, and the meat or meat food products thereof.

Section 3. The owners, lessees, occupiers, or managers of all abattoirs, slaughtering, packing, butchering, meat-canning, meat manufacturing or rendering establishments, and of places or vehicles where meat is prepared, stored, sold, or transported,

shall keep such establishments, places, and vehicles in a wholesome, clean and sanitary condition.

Section 4. The Governor is hereby authorized and empowered to appoint ten persons to serve as agents to assist in the enforcement of the provisions of this act. Such agents shall have knowledge of the diseases of meat producing animals, and shall be versed in the conditions that affect the soundness, healthfulness, and wholesomeness of animal food products. An appropriate standard of fitness for appointees to these offices shall be established and maintained by the State Livestock Sanitary Board.

Section 5. Agents of the State Livestock Sanitary Board, as provided for in section four of this act, shall receive a salary of one thousand eight hundred dollars per year, and their actual necessary traveling expenses while engaged in the proper duties of their office: Provided, however, That such expenses shall not exceed one hundred dollars per month.

Section 6. It shall be the duty of agents of the State Livestock Sanitary Board, as provided in this act, to perform such services prescribed by this act as may be imposed by authority of the State Livestock Sanitary Board. Such agents are authorized, without let or hindrance, to enter upon any premises, or to enter any place, building, vehicle, or vessel, used for the storage, preparation, or transportation of animals or their products, and to examine, in any way that may be necessary, any animals, meats, or meat food product there found, for the purpose of determining whether such animals, meats, or meat food products are, or may be, made into sound, wholesome, and healthful human food. Animals, carcasses, or parts thereof, that are unsound, unhealthful, unwholesome, or otherwise unfit for human food, shall be rejected or condemned, and said animals, carcasses, or parts or products thereof, shall be treated and disposed of in such a way that they cannot be used as human food, as shall be provided by the rules of the State Livestock Sanitary Board.

Section 7. It shall be the duty of the agents of the State Livestock Sanitary Board, as provided by this act, to make examinations of slaughtering, packing, meat-canning, rendering, or similar establishments, and of places where meats or meat food products are manufactured, prepared, stored, or sold, for the purpose of ascertaining whether the said establishments or places are constructed, arranged, equipped, managed, or cared for in such a way as injuriously to affect the soundness, health-

fulness, or wholesomeness, or otherwise to render unfit for human food, the meats or meat food products therein prepared, stored, or sold. In case the establishment, or the manner in which it is arranged, equipped, managed, or cared for, shall be found to be defective in such particulars as to make it probable that, by virtue of such defect or defects, the meats or meat food products may be rendered unsound, unhealthful, unwholesome, or otherwise unfit for human food, it shall be the duty of the agent of the State Livestock Sanitary Board to notify the owner, occupier, or manager thereof as to the nature of the particular defects found, and report the same to the State Livestock Sanitary Board. The said Board shall thereupon send to the owner, occupier, or manager of the defective establishment or place a notice, in writing, in which the defect or defects shall be described; and the owner, occupier, or manager shall thereupon, within reasonable time, remedy, remove, or abolish the said defects. In the case that a defect in respect to the construction, arrangement, equipment, management, or care of a slaughtering, packing, meat-canning, rendering, or similar establishment, or of a place where meat or meat food products are manufactured, prepared, stored, or sold, deemed by the State Livestock Sanitary Board to be of such a nature as to render it probable that the meat or meat food products therein prepared, stored, or sold may, by virtue of said defect, be rendered unsound, unhealthful, or unwholesome, or otherwise unfit for human food, is not removed or abolished within reasonable time, to be designated by the State Livestock Sanitary Board, after notice from the said Board, the said establishment or place may be closed; and the owner, occupier, or manager thereof, and all other persons, are forbidden to use the said establishment or place for the preparation, storage, or sale of meats or meat food products until the said defect is remedied, removed, or abolished in a way that is approved by an authorized agent of the State Livestock Sanitary Board.

Section 8. All cities and boroughs, and all townships of the first class, are authorized and empowered to provide for the appointment of local meat-inspectors, as may be required, and to fix their compensation, which shall be paid from the funds of the city, borough, or township of the first class. The qualifications of such local meat-inspectors shall be certified by the State Livestock Sanitary Board, and they shall have the same authority and duties as are, by this act, conferred on agents of the State Livestock Sanitary Board, and shall be subject to the

same rules and regulations. Such certificates of qualification may be withdrawn or revoked at any time by the State Livestock Sanitary Board, for incompetency or neglect of duty. Local meat-inspectors shall have jurisdiction only within the limits of the city or borough, or township of the first class, by and for which they are appointed. Such local meat-inspectors shall not be governed by ordinances, rules, or regulations that are incompatible with, or that conflict with, provisions of this act, or with the rules or regulations for the guidance of its agents, approved and promulgated by the State Livestock Sanitary Board.

Section 9. The State Livestock Sanitary Board may, under such rules and regulations as it may adopt, not incompatible with the acts of Assembly or the Constitution of the Commonwealth, appoint local agents to examine the animals, carcasses, meats, and meat food products, used, prepared, or stored in local slaughtering, packing, canning, rendering, or similar establishments, and to affix an approved stamp or mark to the meats and meat food products that are found to be sound, healthful, wholesome, and fit for human food. The meats and meat food products that are found to be unsound, unhealthful, unwholesome, or otherwise unfit for human food, shall be rejected or condemned, and disposed of so that they cannot be used for human food, in the manner provided by the rules and regulations of the State Livestock Sanitary Board. Such agents shall report to, and they may be transferred or dismissed by, the State Livestock Sanitary Board. They shall be subject to the provisions of this act, and to the regulations governing and for the guidance of agents of the State Livestock Sanitary Board.

The funds for the compensation of such local agents as are provided for in this section of this act shall be furnished by the owner or manager of the establishment that such agent is appointed to oversee, and upon whose request this form of inspection is established. The funds for the payment of such local agents shall be deposited by the owner or manager of such establishment, to his own credit, in some bank or trust company to be designated by the State Livestock Sanitary Board; and shall be paid out upon the cheque of such owner or manager, payable to the order of the local agent entitled to compensation, after the bill of such local agent for services has been approved by authority of the State Livestock Sanitary Board, and the cheque, so drawn for said compensation, has been approved by authority of said Board: Provided, That such agents

as are provided for by this section of this act shall be appointed only upon request of the persons or firms who agree to meet such expense. Employes of the United States Department of Agriculture, engaged in the inspection of animals, meats, and meat food products, may be appointed agents of the State Livestock Sanitary Board, and be clothed with the powers of such agents: Provided, however, That such employes of the United States Department of Agriculture shall receive no pay or compensation for such service as agents of the State Livestock Sanitary Board.

Section 10. The State Livestock Sanitary Board shall make arrangements for coöperation between the laboratory of the Board and those engaged in the examination and inspection of meat producing animals and meats, so that unusual or difficult diseases and conditions may be scientifically studied and accurately diagnosed for the benefit of the meat inspection service.

Section 11. The State Livestock Sanitary Board may, from time to time, make such regulations for the enforcement of this act as may be necessary to carry its provisions into force and effect, and, so far as is compatible with the purposes of this act, the plans, regulations, and methods of the meat-inspection service of the United States Department of Agriculture shall constitute the standard to be adopted and followed. And the meat-inspection work of the United States Department of Agriculture shall not be repeated or duplicated by the agents of the State Livestock Sanitary Board, nor by local meat-inspectors: Provided, That the provisions of this act shall not apply to animals slaughtered by any farmer on the farm, and sold or transported to market as meat or meat food products; nor to retail butchers and retail dealers in meat or meat food products, supplying their customers. But this proviso shall not prevent agents of the State Livestock Sanitary Board or local meat-inspectors from inspecting such premises, animals, meats, or meat food products, at any time. And if any such person shall sell, or offer for sale or transportation, any meat or meat food products which are diseased, unsound, unhealthful, unwholesome, or otherwise unfit for human food, knowing that such meat food products are intended for human consumption, or shall keep his establishment, salesplace, or vehicle in unsanitary condition, after official notice being served, he shall be guilty of a misdemeanor.

Section 12. No person shall make, duplicate, reproduce,

forge, or counterfeit any stamp, certificate, mark, or emblem used or authorized to be used by the State Livestock Sanitary Board for marking or designating animals, carcasses, meats, or meat food products that have been approved or condemned; and no such stamp, certificate, mark, or emblem, used or authorized to be used by the State Livestock Sanitary Board, shall be used or employed without specific authority so to do from the State Livestock Sanitary Board.

Section 13. Any agent of the State Livestock Sanitary Board, or any local meat-inspector appointed by authority of the said Board, or any local meat-inspector appointed by any city, borough, or township of the first class, who shall pass or approve any meat or meat food product that is unsound, unhealthful, unwholesome, or otherwise unfit for human food, or who shall fail to perform his duties as prescribed by this act, or who shall accept any money, gift or other thing of value from any person, firm, or corporation, or officers, agents or employes thereof, given with intent to influence his official action, shall be deemed guilty of a misdemeanor, and shall, upon conviction thereof, be summarily discharged from office, and shall be punished by a fine of not more than five hundred dollars, or by imprisonment not exceeding one year, or by both such fine and imprisonment.

Any person, firm, or corporation, or any agent or employe of any person, firm, or corporation, who shall give, pay, or offer, directly or indirectly, to any agent, officer, or inspector authorized to perform any of the duties prescribed by this act, or by the rules and regulations of the State Livestock Sanitary Board, any money or other thing of value, with intent to influence said agent, officer, or inspector in the discharge of any duty herein provided for, shall be deemed guilty of a misdemeanor, and, upon conviction thereof, shall be punished by a fine not exceeding five hundred dollars, or by imprisonment not exceeding one year, or by both such fine and imprisonment.

If any person shall sell or offer for sale, or offer for transportation to market, any meat or meat food product which is diseased, unsound, unhealthful, unwholesome, or otherwise unfit for human food, knowing that such meat or meat food product is intended for human consumption, he shall be guilty of a misdemeanor, and, upon conviction thereof, shall be punished by a fine not exceeding five hundred dollars, or by imprisonment for a period not exceeding one year, or by both such fine and imprisonment.

Any person, firm, or corporation, or any officer or agent of such firm or corporation, who shall violate any of the provisions of this act shall be deemed guilty of a misdemeanor, and, upon conviction thereof, shall be punished by a fine not exceeding five hundred dollars, or by imprisonment not exceeding one year, or by both such fine and imprisonment.

Section 14. All fines and penalties arising from violations of any of the provisions of this act shall be paid to the State Livestock Sanitary Board, and shall be immediately paid by said Board to the State Treasurer, for the use of the Commonwealth.

GOOD ADVICE FROM A LAYMAN.—Every day brings tidings of the destruction of valuable herds of cows because of tuberculosis. Why all this destruction? Simply because the men who owned the cattle did not inform themselves thoroughly concerning the disease. Many of them have been stoutly contending that all this tuberculosis talk was a humbug, gotten up for the benefit of veterinarians. When the Hoard's Dairyman herd was started, a number of fine grade heifers and cows were purchased from neighboring farms. We proposed to start safe and stay safe. As soon as we got those cattle home we tested them and, before we got through with it, we killed seven animals. Yet we could make no impression on the farmers from whom we purchased the diseased cattle. They refused to believe a word of it. Yet was it not just as important to them to keep their herd healthy as it was to us? Why should farmers nurse and coddle this disease, keep it and hide it and refuse to know the truth, flattering themselves in a weak way that their "cows are all right." It is not an expensive matter to test a herd. If the disease is there, shouldn't the farmer know it as soon as possible? If it presents a clean bill of health, shouldn't he be vigilant to keep it so? It is a simple matter; start clean, and then keep clean. Test regularly every year. Never take in an animal that has not been tested. Use disinfectants, such as whitewash and zenoleum, carbolic acid freely. Put the King system of ventilation in the stable. Spend a little money to be safe rather than lose a lot of it in slaughtered cattle. These are all common sense precautions; just plain common sense. Some people ask us if we think the country will ever be cleared of tuberculosis. Probably not. But it is no great thing for any farmer to keep his farm clear of it and that will save him a good deal and the country a little.—(*Hoard's Dairyman*, May 31, 1907.)

CORRESPONDENCE.

INFORMATION SOUGHT ON SPASM OF THE DIAPHRAGM.

PICTON, ONTARIO, CANADA, May 30, 1907.

Editors American Veterinary Review:

DEAR SIRs:—Can you or any of your correspondents give me any light on the following case?

A young horse with a good deal of speed is troubled with spasm of the diaphragm very slightly. Will sometimes show it a little after a first or second heat and then not any more when worked more and faster, and sometimes just slightly after work when taken to the barn for a few minutes. Is in good health otherwise and does not seem a bit distressed at the time and the spasms always pass away in a few minutes or half an hour. It has been this way for over a year. Yours truly,

R. H. McKENNA, V. S.

COLLEGE COMMENCEMENTS.

UNIVERSITY OF PENNSYLVANIA, VETERINARY DEPARTMENT.

At the graduating exercises of this school in June, the following gentlemen received the degree of "Doctor of Veterinary Medicine": Jose T. de Acosta, Howard H. Counselman, Howard H. Custis, Thomas Easen, George M. Garrett, Guy M. Graybill, William A. Haines, Oliver T. Hendren, Frederick S. Hope, Frank E. Lentz, Vance R. Lidstone, Ellis R. McClure, Francis P. McCushing, Warren B. Morgan, Frank R. Olding, William C. Prouse, Charles C. Schloemer, Harry W. Schoening, George A. Schwartz, Albert N. Smith, Arthur N. Smith, Arthur Spitz, Foster A. Wagner, William T. Webb, Joseph A. Wilkinson, Waverly A. Windle, Frank A. Wright.

Dean Leonard Pearson received at the same time the honorary degree of "Doctor of Medicine, *honoris causa*."

A NEW LAW in Illinois gives horse-shoers a lien on the horses and mules which they shoe until the bill is paid.

A JERSEY BULL was recently sold for \$11,500 and an Aberdeen Angus cow for \$2010.

SOCIETY MEETINGS.

AMERICAN VETERINARY MEDICAL ASSOCIATION.

The forty-fourth annual meeting of the A. V. M. A. will take place in Kansas City, Mo., Tuesday, Wednesday, Thursday and Friday, Sept. 10, 11, 12, and 13, and arrangements are well advanced in the literary, clinical and local program of arrangements and entertainment. While none are in a finished state, Secretary Lyman has kindly furnished the following list of essayists and their subjects, and, with the object of giving our readers some idea of the character and scope of the themes to be presented, we herewith append the list, reserving until the August number the full details. In that number we hope to present the official program, together with photo-engravings of the officers and some of the scenes about Kansas City which will be in one way or another associated with the meeting.

"My Experience in and with the United States Bureau of Animal Industry"—Dr. Richard Ebbitt, Grand Island, Neb.

"A Subject Pertaining to Meat Inspection"—Dr. John R. Mohler, Washington, D. C.

"Sentiment as a Factor in Meat Inspection"—Dr. S. Stewart, Kansas City, Mo.

"Tumors"—Dr. A. T. Kinsley, Kansas City, Mo.

"The Problem of Pure Milk for Cities"—Dr. Roscoe R. Bell, Brooklyn, N. Y.

"Milk as Affected by Handling and Exposure"—Dr. M. H. Reynolds, St. Anthony Park, Minn.

"Municipal Milk Inspection in the South"—Drs. C. A. Cary and Ward Giltner, Auburn, Ala.

"Veterinary Educational Reforms"—Dr. A. Liantard, Paris, France.

"Observations on Veterinary Education and Practice in Europe"—Dr. Pierre A. Fish, Ithaca, N. Y.

"The Place of Veterinary Medicine in State Education"—Dr. D. Arthur Hughes, Chicago, Ill.

"The A. V. M. A. as an Educator"—Dr. E. M. Ranck, Natchez, Miss.

"The Veterinarian and the National Guard"—Dr. T. Earle Budd, Orange, N. J.

"Intestinal Obstructions of the Horse"—Dr. A. H. Baker, Chicago, Ill.

"Anthrax Vaccines"—Dr. R. R. Dinwiddie, Fayetteville, Ark.

"Reminiscences of Bovine Tuberculosis in Massachusetts"—Dr. J. F. Winchester, Lawrence, Mass.

"The Effects of the Tuberculin Test upon Lactation"—Dr. S. H. Gilliland and E. L. Comman, Philadelphia, Pa.

"The Agglutinating and Precipitating Powers of Glandered and Non-Glandered Blood Serum in Diagnosis"—Dr. Walter J. Taylor, Ithaca, N. Y.

"Stable Ventilation from a Clinical Standpoint"—Dr. G. A. Johnson, Sioux City, Iowa.

"Infectious Ulcerations of the Lips and Legs of Sheep"—Dr. M. E. Knowles, Helena, Mont.

"Notes on the Surgical Relief of Roaring"—Dr. W. L. Williams, Ithaca, N. Y.

"Practical and Applied Surgery"—Dr. C. C. Lyford, Minneapolis, Minn.

(Title to be announced later)—Dr. J. A. Conture, Quebec, Canada.

"Rabies as Expressed in the Connecticut Epidemic"—Dr. G. W. Loveland, Torrington, Conn.

Certainly, there is sufficient of variety and value in the above enumeration of topics for discussion to attract the attendance of veterinarians in every field of professional work.

A letter from Dr. S. Stewart, Chairman of the Local Committee of Arrangements, under date of June 18, contains the following in reference to the meeting:

"The Local Committee are trying to complete arrangements to make this meeting a valuable one to the Association and I hope a pleasant one for those who come here. We are planning a trip to one of the large packing houses that the members may see for themselves the most excellent sanitary conditions under which meat products are prepared for human consumption, and while at the packing house there will be an exhibition of pathological specimens obtained from food producing animals. The display will show what the inspector finds and how the public is protected through the performance of his duties. The Armour people promised us in addition a dainty luncheon to be served in the commodious office building just before leaving the plant. I really believe that the veterinarians of the country and the lady friends who accompany them will very greatly enjoy the privilege of the proposed trip to and through the packing house.

"We have been considering whether or not the ladies would like to hear a paper and its discussion on 'Contamination of Milk and Best Methods to Prevent Same.' This subject is to be a part of the evening program. What do you think as to the probability of the ladies being sufficiently interested to attend?"

Our reply to Dr. Stewart's closing inquiry was emphatically affirmative.

CALIFORNIA STATE VETERINARY MEDICAL ASSOCIATION.

The March meeting, was held in Fresno.

The program called for the clinic to begin at 9.00 A. M., and a large number of members and visitors were assembled at the hospital of Drs. Longley and Betzold before the hour named. As each arrived at the office he was presented with a gelatine capsule filled with Fresno raisins suspended by a yellow ribbon. This each pinned to his coat lapel.

There was a large amount of clinical material and the operations and demonstrations were successful and interesting. Drs. Longley, Fox, Danielson and Griffith took part in the operations. After the program was completed and all had examined the equipment of this modern hospital, adjournment was taken for lunch.

At 1.30 P. M., the members and their friends boarded an electric car for a ride through the city and vicinity. Here the beauties and the prosperity of the city of Fresno and the grandeur and fertility of the surrounding country was unfolded to each visitor. Each had an exclamation of surprise and wonder as a new view came in sight. Rightly should the citizens of that valley city be proud and boastful of their homes.

Returning to the Sequoia Hotel at 3.00 P. M., the regular business session was called to order. After the disposal of the order of business the reading and discussion of papers was taken up.

Dr. H. A. Spencer, of San Jose, was the first member called upon, and he read a poem dealing with evolutions of men in general and veterinarians in particular. It was a flow of wit and wisdom. The Doctor never "rises to speak" but that there are ready listeners.

The next paper was by Dr. Longley, "Treatment of Laminitis." This paper was well prepared and the discussion that

followed brought forth many original thoughts and the exchange of ideas of city and country practitioners were very helpful.

Dr. Danielson, of Madera, presented a most interesting paper on "Mammitis." Every one listened attentively to the reading of this essay, for it is a subject that veterinarians are eagerly searching for information on. The discussion that followed the reading of Dr. Danielson's paper was most spirited. Owing to the great importance of this subject, Dr. Archibald, of Oakland, made a motion, which was seconded and carried, that a committee of five be appointed to discuss the subject of mammitis at the next meeting. President Browning named Drs. Keane, Fox, Danielson, Longley, and H. A. Spencer, as the committee.

After the adoption of resolutions tendering the gratitude of the California State Veterinary Medical Association to State Senator J. A. McKee and Hon. Fred. E. Pierce, Assemblyman from the 72d District, for their efforts in securing the passage of a law regulating the practice of veterinary medicine and surgery in this state, adjournment was taken, to meet at Oakland next meeting.

Following the adjournment, the San Joaquin Valley veterinarians tendered a banquet at the Sequoia Café to the Association and their friends. A most excellent *ménu* was served and jolly goodfellowship reigned. After cigars had been passed, Dr. Archibald, acting as toastmaster, called attention to "food for thought," and cited a few recollections, beginning his career as a veterinarian in the city of Fresno, some fifteen years ago. After briefly reviewing the changes that had taken place in the veterinary world and particularly in our own state, he called upon Dr. H. A. Spencer, a member of the Old Guard—"Veterinarians of Twenty Years Ago." The Doctor responded with his usual grace and wisdom, telling of the stages of gradation the Association has passed through since its first organization. He paid honor to those who gave the best efforts of their years to make a place for the veterinarian in the social and scientific world. Calling the names of the Old Guard (he being the only one present) he asked the members to rise and drink a toast to the absent ones.

After telling of the work that had been done by the Legislative Committee in securing the enactment of a law to regulate practice in this state, the toastmaster called upon Dr. Fox, of Sacramento,— "Veterinary Legislation." Dr. Fox, having served

upon every Legislative Committee appointed by the Association and having long been a resident of the Capital City, was well qualified to tell of the ups and downs of the Legislative Committees. He recited the experience in trying to get a bill before the Legislature and how each one has raised the standard till now we have a law that compares favorably with any other state's. The Doctor told of the untiring efforts of Drs. Archibald and Keane in guiding the bill through the committees and houses, how Drs. Spencer and Creely had assisted, and the work others had done to help the committee.

The toastmaster next called upon Prof. Emil Weschcke, M. D.,—"Reciprocity in Medicine." Dr. Weschcke began with a brief review of medicine and the common interests of the human physician and the veterinarian. He was most earnest in his praise of the veterinarian for his part in sanitary science and said that the physician no longer hesitated to turn to the veterinarian for knowledge of infectious diseases common to man and lower animals. The Doctor is a graceful and most entertaining speaker, and it was surely pleasing to veterinarians to hear their profession spoken of in such terms by a member of the medical profession.

Dr. Wm. M. MacKellar, B. A. I., was called upon to tell of the work being done by his force in "Tick Eradication in California." The Doctor briefly told of the Bureau work and asked for the coöperation of all veterinarians.

The last speaker of the evening was Dr. Longley, of Fresno. The toastmaster asked him to explain the ways of the San Joaquin Valley veterinarians. Dr. Longley told of the pleasure it had given the San Joaquin Valley veterinarians at being able to entertain the Association. He assured all present that it was not a bit "put-on," but the way they always did things at Fresno. With all standing, a toast was given to the San Joaquin Valley veterinarians.

Thus ended the most successful and interesting meeting ever held by the California State Veterinary Medical Association.

CHARLES EASTMAN, *Secretary*.

MONTANA VETERINARY MEDICAL ASSOCIATION.

Acting in accordance with request of Dr. E. D. Nash, of Helena, Montana, a few of the Montana veterinarians met at the office of Dr. M. E. Knowles in the Capitol Building for the purpose of organizing the Montana Veterinary Medical Association.

Meeting called to order by Dr. M. E. Knowles at 11 A. M. Present:—Drs. A. D. Knowles, Livingston; J. A. Madden, Bozeman; N. B. Smith, Billings; Wm. V. Lusk, Fort Assiniboine; E. D. Nash, M. E. Knowles and E. T. Davison, Helena.

On motion of Dr. Davison, seconded by Dr. Madden, Dr. M. E. Knowles was chosen as temporary Chairman. On motion of Dr. Smith, seconded by Dr. Nash, Dr. Davison was chosen as temporary Secretary.

The Chairman then appointed as committee on nominations, Drs. A. D. Knowles, Madden and Smith. A recess of five minutes was then taken to await the report of Committee on Nominations.

At the expiration of the allotted period the Committee returned and reported for officers of permanent organization, Dr. M. E. Knowles, President; Dr. N. B. Smith, Vice-President; Dr. E. T. Davison, Secretary-Treasurer. On motion of Dr. Nash, seconded by Dr. A. D. Knowles, the recommendations of the committee were approved and officers declared elected.

On motion the Chairman was requested to appoint a committee to formulate a Constitution and By-Laws, and in accordance with request appointed Drs. Lusk, Nash and A. D. Knowles. On Dr. Lusk's request that he be excused from acting on the committee on account of being a temporary resident, Dr. Smith was appointed in his stead. An adjournment until 12 M. was then taken to await the report of the Committee on Constitution and By-Laws.

At the expiration of the allotted time the committee reported that they would have to have more time in order to draft such a Constitution and By-Laws as would be appropriate for the organization. An adjournment was then taken until 2.45 P. M.

Reconvened at 2.45 P. M., and called to order by President Knowles. On motion Dr. Smith, Chairman of Committee on Constitution and By-Laws, was requested to read the same as drafted by the committee. Dr. Smith reported that the Committee had deemed it expedient to adopt for our organization the Constitution and By-Laws of the American Veterinary Medical Association, with such modifications as would be necessary by reason of ours being a State organization. (Then followed the reading of the Constitution and By-Laws.)

Constitution and By-Laws as reported by the Committee, unanimously approved.

On motion it was voted that non-resident veterinarians, who

by reason of their duties, official or otherwise, may have temporary residence in the State, may become members of the Association upon application in the regular manner and the payment of customary fees.

The matter of appointing permanent committees was then taken up and President Knowles appointed committees as follows:

Legislative Committee—Drs. A. D. Knowles, Nash, Madden, Davison, C. F. Leslie, Z. Carl Boyd and W. C. Orr.

On motion it was voted that Dr. M. E. Knowles also be made a member of the Committee on Legislation.

Diseases—Drs. F. C. Eells, A. H. Cheney and J. A. Madden.

Finance—Drs. W. J. Butler, C. F. Leslie and E. D. Nash.

Local Arrangements—Drs. Nash, Davison and Eells.

Executive Committee (in addition to elective officers)—Drs. A. D. Knowles, Madden and Nash.

Necrology—Drs. W. J. Butler and L. A. Nutting.

Resolutions—Drs. Madden, A. D. Knowles and Cheney.

On motion it was voted that the Secretary-Treasurer be directed to purchase suitable minute-book, arrange for the printing of certificates, Constitution and By-Laws, purchase a seal for the Association and such other material or appliances as may be necessary for the transaction of the business of the Association.

Vice-President Smith was then called upon to preside over the meeting and the last order of business, consisting of the reading of papers, was then taken up.

Dr. A. D. Knowles read a very interesting and instructive paper on

“THE STREPTOCOCCI INFECTIONS AND MY EXPERIENCE WITH ANTISTREPTOCOCCIC SERUM.

“The *Streptococcus pyogenes* is rather a small coccus, arranged in chains, each coccus being divided into two hemispheres by a line of division running at right angles to the axis of the chains. The chains may be made up of many cocci and be quite long. It is aerobic and there may be free cocci. Stains by Gram’s Method.

“The character of the growth in bouillon is subject to considerable variation and certain doubtful varieties (?) of the streptococcus are distinguished mainly by the bouillon culture.

“The result of the inoculation of animals is not constant,

great variation in the virulence of different cultures being observed.

"The streptococcus occurs frequently in the spreading phlegmonous inflammations as well as in suppurative processes generally, and is one of the most common causes of septicæmia. It is almost always present in inflammatory conditions of the mucous membrane of the pharynx, and is often encountered in broncho-pneumonia. In erysipelas it is almost invariably the infecting organism and it is the most frequent cause of puerperal septicæmia; although the streptococcus is distinctly a pus-producing bacteria, yet the inflammations of the soft parts of the extremities which are produced by it are generally characterized more by necrosis and serous or hæmorrhagic exudation and infiltration than by the breaking down of tissue and pus production.

"The streptococcic infection which I have had occasion to treat, more than any other in this state, is that caused by the *Streptococcus equi*, which causes equine strangles.

"The predisposing causes to this infection are: Anything which will suddenly deplete the system of the animal and thereby reduce the power of resistance to the infection, also wounds of the skin or mucous membrane and general debility from any other cause.

"The infection is disseminated by the lymphatic system and the disease is characterized by a variety of symptoms which correspond to the tissues, organ or system which becomes the seat of the disease as a complication of the general infection.

"The period of incubation is three to five days. There is a mild form of this disease in which the lymphatics of the head and throat are slightly inflamed and the mucous membrane of the nasal passages, mouth, pharynx and larynx take on a mild form of catarrh.

"In the irregular or malignant form there is a marked constitutional disturbance, characterized by high temperature, congested visible mucous surfaces, rapid prostration, often showing symptoms also of intoxication and partial or complete paralysis.

"The complications with which I have met are: Laryngopharyngitis, œdema of the glottis, tracheitis, bronchitis, pneumonia, stomatitis, gastro-intestinal catarrh, hepatitis, pleuritis, pericarditis, endocarditis, diabetes, peritonitis, pyæmia, neurasthenia and cutitis.

"The conditions which I have noticed in this state which particularly favor the infection just described, is the custom of riding and driving horses long distances in a short space of time, thereby depleting their vital forces, which is too often followed by exposure to cold wind and other inclement weather, or if sheltered at all are placed into a crowded, illy-ventilated, unsanitary stable, where they are confined for from one to several days.

"Other diseases in which the streptococcus plays an important part are purpura hæmorrhagica, equine influenza, gangrenous pododermatitis, streptococcus of contagious pneumonia of equines, infective gastro-intestinal catarrh of the newly-born animal and the streptococcus infection of the limbs of cattle and sheep.

"The streptococcus yields readily to the application of disinfectants, but after it once gains entrance into the system it is difficult to control; its progress in the production of tissue changes is rapid and destructive.

"Within the past three months I have used about five thousand c.c. of antistreptococcic serum, but have had only a few patients in which I could make a daily clinical record; most of the animals treated were so far away that only a single call was made.

"*Case 1.*—Feb. 17, 1907, roan mare, used in livery, was well on the previous day. Temperature $106\frac{2}{3}$, pulse 60, respiration 40, head and ears drooped, staggered when led out of stall. Treatment.—30 c.c. antistreptococcic serum, 'Pasteur,' hypodermically, also digitalis, strychnine and belladonna in solution, to be given by the mouth every two hours. Feb. 18, temperature 103, pulse 60, respiration 20. Feb. 20, temperature, pulse and respiration normal.

"*Case 2.*—April 3, gray gelding, 1400 lbs., used on dray, 'had slight cough and nasal discharge for a week, worked up to three days before, when he seemed very sick.' Temperature 105, pulse 72, wiry, respiration 30, labored; right lung in stage of red hepatization. Injected 20 c.c. antistreptococcic serum and gave the usual pneumonia treatment. April 4, temperature 104, respiration 30, pulse 60. April 5, temperature 104, pulse 60, respiration 25. April 6, temperature 102, pulse 45, respiration 20. Did not see animal again until put to work.

"*Case 3.*—April 10, chestnut gelding used for driving; for ten days past was not well, was worse the past three days.

Temperature 106, pulse 80, wiry, respiration 45, labored; left lung in stage of red hepatization, extreme dullness and severely prostrated. Injected 30 c.c. antistreptococcic serum and gave the usual pneumonia treatment. April 11, temperature 104, pulse 60, respiration 30. April 12, temperature 104, pulse 60, respiration 30. April 13, temperature 103, pulse 50, respiration 25. April 14, temperature 102, pulse 45, respiration 20. April 15, temperature 101, pulse 40, respiration 20. Case discharged.

"I will say that previous to the use of the antistreptococcic serum, several horses suffering from some form of the streptococcic infection, which came under my care, had died. While I do not consider the serum treatment a specific, I am convinced that its proper use will greatly lessen the mortality of animals suffering from streptococcic infections.

"I have not had an opportunity to test the use of the antistreptococcic serum as an immunizing agent, but it is my opinion that its use should be recommended where horses are to be unduly exposed, as in shipping, or where we are called to treat deeply punctured wounds, or even in castration of valuable animals."

Discussion led by Dr. Madden, who stated that he had also used the serum with very satisfactory results. He was also of the opinion that its administration modified attacks of strangles.

Dr. E. T. Davison then read a paper on "Dourine and a Few Conditions Simulating it."* Discussion led by Dr. M. E. Knowles.

On motion it was voted that the thanks of the Association be extended to Drs. Knowles and Davison for their papers, and that the Secretary be instructed to offer them to AMERICAN VETERINARY REVIEW for publication.

Adjournment was then taken until October 2d, 1907.

E. T. DAVISON, *Secretary*.

VETERINARY MEDICAL ASSOCIATION OF NEW YORK CITY.

The June meeting had been advertised to be devoted to the special purpose of considering the law governing the practice of veterinary medicine and the educational conditions in New

* Will be published in an early number of the REVIEW.

York State. The meeting was called to order at the usual place at 8.30 P. M., June 5, and there were present from distant points, by invitation of the Association, the following eminent members of the profession :—Dr. W. Horace Hoskins, Philadelphia, Pa.; Dr. Wm. Herbert Lowe, Paterson, N. J.; Dr. Richard P. Lyman, Hartford, Conn.; Dr. W. L. Williams, President New York State Veterinary Medical Society, Ithaca, N. Y.; Dr. W. G. Hollingworth, Utica, N. Y.; Dr. Thomas E. Smith, Jersey City, N. J.; Dr. Henry Vander Roest, Newark, N. J., and a large number of veterinarians in and around the Metropolis, besides a good representation of the membership.

President Bell called the meeting to order, and, dispensing with the usual routine business, stated the object of the meeting to be a discussion of the present status of our practice law and the condition of veterinary education in New York State. He felt that the Association was greatly honored by the response to its invitation to the gentlemen from neighboring states, for every one who had received an invitation to meet with us and discuss our problems, had responded in person by laying aside business matters and coming to assist us. He stated that the situation in the Empire State was very grave; that the cities and towns were rapidly filling up with men who could not register as practitioners under the law, and that we were powerless to prevent them from practicing, as the law was defective in that no practical punishment is provided for such men. While the penalty for a non-graduate is that of a person committing a misdemeanor (\$250 fine and imprisonment for six months), the graduates of schools whose diplomas are not recognized by the Regents are only guilty of a non-classified offense; the law states merely that "he shall forfeit \$50 for each day of such illegal practice." No provision is made for the collection of the fine, and no punishment in case of its non-payment. New evidence would have to be secured for every day that such fine is imposed, and even if this were done, the law can easily be defeated by the offender owning no property in his own name. Knowledge of these conditions was, he said, widespread, and graduates from two-year schools and other schools which do not maintain a four-year high school entrance requirement were taking up practice in the state, and were laughing at the profession in the state which has the honor of having enacted the first law recognizing the veterinary profession. Not only was the practice law the cause of derision and disregard, but the condition of the veterinary schools of the

state in relation to veterinary education in general was ridiculous. By the high entrance requirement, students well equipped to make veterinarians of a high order were forced to seek their education in other states, and they could return and practice here, or, if they cared to conform to the law, they could secure the required counts after graduation and present themselves to the Examining Board for a license. As a result of this condition the attendance at the schools is inconsiderable, and, if the law is not amended, any school depending upon the fees of students must close its doors, while even the school which is supported by state appropriation will have so few students, even though tuition is free, that the cost to the state of each graduate will be so high as to enlist the attention of the law makers. According to the address of the President of the State Society, delivered at Buffalo last September, the schools are not turning out one-third as many practitioners as are dying or retiring from business, and the proposition to drive out of the state non-registered men is met by the question as to whether we can supply their places by qualified practitioners. And, further, if those unlicensed men be forced out and their places left vacant, is there not danger for the entire fabric of the law? President Bell stated that he did not yield the first place to any man in appreciation of the advantages of higher education for the veterinarian; but he submitted that the cause of higher education was being retarded rather than advanced by the policy adopted in this state, and he pointed out that the facts that the schools were comparatively empty and the state full of unlicensed men were evidences of the failure of the laws maintaining in New York State. He thought the situation desperate, and it demanded the most earnest consideration of every veterinarian having the welfare of the profession at heart. He knew that the subject was better handled in some of our neighboring states, and for this reason some of their strong men had been invited to meet with us to consider the subject and give us the benefit of their experience and judgment.

Dr. W. Horace Hoskins, Secretary of the Pennsylvania State Board of Veterinary Medical Examiners, told of the conditions in his state; he recounted the wonderful achievements of the profession in the Keystone State, before the last legislature, which met the demands of the profession in every bill which it offered. He told of the sacrifices made by the leading veterinarians in behalf of the profession, and said that only

with such a spirit could anything be accomplished in New York. He lashed the profession in New York unmercifully for its laxity, and believed that nothing of real value could be accomplished unless a better spirit prevailed. He thought the schools were deficient in teaching special subjects of paramount importance to the modern veterinarian, notably milk and meat inspection, and the system of the Regents in having the members of the Board of Examiners pass upon the qualifications of candidates for license without ever seeing the individual was deplorable. He felt that personal contact with a candidate gave a better estimate of his qualifications for practice than mere theoretical answers to intricate questions. He delivered a sound scolding to those practitioners who, while pointing with pride to their own regularity, yet employed assistants who were themselves not registered, and in some instances were not graduates of any school.

Dr. Hoskins was followed by Dr. Lowe, who told of the working of the New Jersey law, but he was unable or unwilling to state what should be done in New York.

Dr. W. L. Williams was certain something was wrong with both the law and the schools, but he claimed that the remedy lies, not in a reduction of the requirements for entrance into the schools, but a higher efficiency of the schools; that the state, having undertaken to regulate them, should render greater financial aid, and he believed that if the quality of the teaching was of a higher order the number of students would increase sufficiently to meet the demands for veterinarians. He was convinced that attempts to prosecute under the law would be unsuccessful, and believed that it would be unwise to drive men out of the state when their places could not be filled.

Dr. Richard P. Lyman, of Connecticut, was of the opinion that the requirements for entrance to the schools were too high, and that greater progress would be made if they were brought to a conservative basis—higher, however, than those of every other college in the country; yet not at the present prohibitive standard. The profession is young, and it is progressing very rapidly, and he believed greater progress could be made if there was greater uniformity among the schools throughout the union.

Drs. Lowe and Hoskins, each a member of the Examining Board of his respective state, told of their prosecutions of illegal practitioners, and in almost every instance the offender had

been forced to flee and had crossed the border into the Empire State, where he is free from molestation.

Drs. Hollingworth, Vander Roest, Smith, Ackerman, Grange, Crawford, Ellis, Clayton, Dickson, and many others spoke upon the subject, all believing that the situation called for action by the State Society at its approaching meeting, and at the conclusion of the speaking, Dr. Ackerman offered the following resolutions, which were unanimously adopted :

"*Resolved*, That it is the sense of this meeting,

"*1st.* That we have been lax in the prosecuting of our illegal practitioners.

"*2nd.* That the entrance requirements to our Veterinary Colleges are too high, and our schools' courses are inefficient along certain lines of Sanitary Medicine.

"*3rd.* That we recommend to our State Society that our laws be amended to make all illegal practitioners suffer the penalty of a misdemeanor.

"*4th.* That our Board of Veterinary Examiners be given some power in the registering and prosecution of illegal practitioners."

Dr. D. J. Dixon, of Hoboken, N. J., was unanimously elected to membership.

Copies of the new Constitution and By-Laws adopted at the March meeting were distributed by Secretary Blair, and they reflect great credit upon his tact and taste.

Dr. Charles E. Clayton exhibited a number of specimens of fractured bones of horses which he had recently recovered at post-mortems in his practice. He also showed the two navicular bones from the front feet of a horse which had been treated by a number of veterinarians, the majority directing their efforts upon the shoulders.

The specimens, however, showed extensive lesions of the os navicularis.

Dr. Cox sent around among the members the dead body of a kitten which he had removed from its mother the previous day, and which lived for several hours. It presented two mouths and four eyes, with an abbreviated caudal appendage having an enlargement at its termination. In sucking it was unconcerned as to which mouth enveloped the maternal teat.

After a hearty vote of thanks to the visiting veterinarians, the Association adjourned to meet the first Wednesday in October.

(R. R. B.)

VETERINARY ASSOCIATION OF THE DISTRICT OF COLUMBIA.

A meeting of this Association was held on the evening of April 24, 1907, at the office of Dr. D. E. Buckingham, 2116 14th Street, N. W. There was the usual large attendance. The feature of the evening was the reading of a paper by Dr. E. C. Schroeder, Superintendent of the Experiment Station, Bureau of Animal Industry, Bethesda, Maryland, on "Tuberculosis: The Mode of Infection and the Cow,"* which was of great interest and value, and elicited a lengthy discussion. Numerous questions were asked the essayist and were answered in a manner which indicated his wide learning and thorough knowledge of the subject. A rising vote of thanks was tendered Dr. Schroeder for his paper.

F. M. ASHBAUGH, D. V. S., *Secretary*.

KEYSTONE VETERINARY MEDICAL ASSOCIATION.

The regular meeting was held at Donaldson's Hall, Broad and Filbert streets, on Tuesday evening, June 11th. Dr. B. M. Underhill, the President, occupied the chair, and the following members responded to roll-call:—Drs. J. W. Adams, H. Black (of Hammonton, N. J.), B. Kirby (of Woodbury, N. J.), W. H. Hoskins, W. L. Rhoads, Charles Lintz, C. J. Marshall, E. W. Powell, J. W. Vansant. Visitors:—Dr. Carlisle, Dr. Kline, of South Carolina, and several students of the University of Pennsylvania.

The minutes of the previous meeting were read and approved, and there being no other business the President called upon Dr. J. W. Adams for his paper upon "Castration of the Cryptorchid." Dr. Adams simply delivered a lecture upon the subject in such a graphic manner, that all present seemed to know all about cryptorchid castration when he finished.

Dr. C. J. Marshall spoke upon the "Etiology of Parturient Paresis." He cited the views of many veterinarians upon the subject. Some claim that it is due to a micrococcus which gains entrance from abrasions upon the vagina or uterus at the time of parturition, but experience disproves this theory. The cerebral anæmia theory seems the most plausible, and Dr. Meyers, a German veterinarian, cited cases to substantiate it.

* Published in "Original Articles" department of this number of REVIEW.

Dr. Kline, of South Carolina, spoke of the condition in that state, showing that cotton and not livestock was the main industry.

The meeting adjourned at 11 P. M.

A. W. ORMISTON, *Secretary*

YORK CO. (PA.) VETERINARY MEDICAL ASSOCIATION.

This Association held its regular meeting at York, Pa., June 4, and there was a good attendance.

Two papers were read and well discussed—one by Dr. E. S. Bausticker on "Parturient Paresis" and one by Dr. W. L. Herbert on "The Mallein Test for Glanders in Horses." There was also a general discussion on tuberculosis.

One new member was elected. The next meeting will be held at the same place on September 3.

E. S. BAUSTICKER, *Secretary*.

ILLINOIS STATE VETERINARY MEDICAL ASSOCIATION.

The Illinois Veterinary Medical Association will hold its semi-annual meeting in Springfield, July 10th. Our first summer meeting was held in Bloomington last July and proved to be a decided success. Springfield being an attractive city, and with a good program promised, we anticipate a large gathering and a very profitable meeting.

Come and meet with us. N. I. STRINGER, *Secretary*.

TWIN TROTTERS are in training at the track at Lexington, Ky. They are "Star Prodigal" and "Starless Prodigal." But for a star in the forehead of the former, they are indistinguishable.

"A COMPARATIVE STUDY OF TUBERCLE BACILLI FROM VARIOUS SOURCES," by John R. Mohler, V. M. D., Chief of Pathological Division, and Henry J. Washburn, D. V. S., Assistant Chief, has just been issued by the Bureau of Animal Industry as Bulletin No. 96. It is an exhaustive compilation upon the subject, illustrated by a number of colored plates, and students of the subject should secure it by all means. Dr. Mohler is a tireless worker, and his conclusions are sound and definite.

NEWS AND ITEMS.

DR. J. F. MENNE, of Newport, Kentucky, died suddenly on March 20.

DR. E. W. HANSON, McNabb, Ill., was married on March 21 to Miss Grace Russell, of Chicago.

DR. A. A. MUNN, of Kearney, Neb., was recently married to a daughter of the Mayor of that city.

DR. W. O. MCGUIGAN (O. V. C. '07) has passed the Ohio Board of Examiners and opened an office in Salem.

DR. W. E. WIGHT, City Veterinarian of Pittsburgh, Pa., has recovered from a serious illness and resumed practice.

DR. S. J. WALKLEY (McKillip '07), of Georgia, has joined the B. A. I. forces at the National Stock Yards, Chicago.

DR. B. T. WOODWARD, B. A. I., has been transferred from Chicago to the Pathological Division, Washington, D. C.

THE VETERINARY MEDICAL ASSOCIATION OF NEW JERSEY will hold its semi-annual meeting at Asbury Park, July 11 and 12. A good literary and clinical program has been provided.

DR. R. M. BEACHY, of Meyersdale, Pa., has completed a commodious new veterinary hospital and enjoys a lucrative practice.

DR. J. J. DRASKY, of Crete, Neb., is a member of the School Board of his city, having recently been elected by the largest popular vote of any of the members.

DR. R. F. EAGLE, Assistant Chief of the U. S. Inspection Service at Kansas City, made a two weeks visit to friends and relatives in Chicago during the first part of June.

N. C. SPALDING (K. C. V. C. '07) has located at Provo, Utah, and has been appointed a member of the Board of Veterinary Examiners recently created by the new law.

"I AM highly pleased with the REVIEW, and am sure that it deserves every support from the profession."—(C. H. H. Sweetapple, V. S., Fort Saskatchewan, Alta., Canada.)

DR. LOUIS A. KLEIN, South Carolina Agricultural Experiment Station, is the author of an important bulletin (No. 130) on "Methods of Eradicating Cattle Ticks," published in May.

MICHIGAN has passed a law known as the "Simpson Bill," which will henceforth permit only graduates of three-year veterinary colleges to register and practice veterinary medicine and surgery in that State.

DR. HARRY O. GRATZ, of Pittsburgh, Pa.; Dr. Walter E.

Tapp, of Morgantown, W. Va., and Dr. J. P. Willey, of Marietta, Ohio, have accepted appointments in the Quartermaster's Department, U. S. Army, and are now on special duty in Cuba.

H. G. ROGERS, a non-graduate practitioner, of Washington, Pa., was convicted on a charge of violating the laws regulating the prescribing, dispensing and sale of cocaine, and was sentenced to undergo three months' confinement in the county jail.

DR. ROBERT A. MCAUSLIN, of Brooklyn, N. Y., was married on the 27th ult., to Miss Charlotte Henry, also of Brooklyn. Dr. McAuslin is a graduate of the New York-American Veterinary College, class of 1903, and is practicing in partnership with Dr. L. McLean.

DR. A. C. KNAPP, of Bridgeport, Conn., was doubly blessed this Spring. On April 24, he was united in marriage to Miss Joséphine L. Silleman, of that city, and on May 1 he received the appointment, after competitive examination, of Milk Inspector of Bridgeport.

MORE like a jack rabbit or a kangaroo is a calf recently born in a Western State. Its front legs are quite a little shorter than its hind ones, and it has no tail at all. Instead of moving and frisking about like its playmates, this odd looking creature covers the ground by leaps.

DR. COOPER CURTICE, long in the employ of the Bureau of Animal Industry, was in Kansas City the middle of June making an official inspection of the Texas fever tick quarantine division. The Doctor is alert to every phase of the fever tick problem and is gathering much information for the benefit of the Bureau.

DR. H. D. GILL, of New York, on Saturday, June 15, in the cup races of the Speedway, drove his black pacer "Coast Marie" for the Morosini Cup, valued at \$1000, half mile heats against Andrew Crawford's trotter "Invader," defeating the latter in the remarkable time of 1:00, which is the fastest half-mile ever paced on the road.

DANIEL W. MCDORMAN, a non-graduate veterinary surgeon of 23rd Street, near Fourth Avenue, New York City, died at the New York Hospital on June 15th, from acute glanders, contracted from a horse. Two autopsies were held—one by the hospital authorities and one by the coroner's physician—and the diagnosis was confirmed by each.

THE EMPLOYÉES OF THE B. A. I. stationed at St. Joseph, Mo., indulged in a royal banquet at the Hotel Metropole, Satur-

day evening, June 15th. Dr. R. L. Baker, Kansas City, was the guest of honor. The excellent *menu* and post prandial speeches served so aptly in enhancing good fellowship that many resolved to make such a banquet an annual affair of the force at St. Joe.

THE GILES REMEDY CO., of Chicago, is extensively advertising a statement that "35 horses in a New York barn, diagnosed as glandered by one vet., and condemned to death," "were not glandered; it was nasal gleet. Saved by Giles." It is stated that, "for obvious reasons," the name of the owner of this remarkable herd is withheld. The "obvious reason" is probably the untruth of the story.

THE HEALTH DEPARTMENT OF KANSAS CITY is making a start toward securing a sanitary condition of the city's meat markets and milk depots, and efforts are being made looking toward the control of the milk supply of this city. Dr. Lloyd Champlain, the only veterinarian in this department, has been able to bring about a very great improvement in the physical conditions of retail shops, and meat cutters take kindly to the requirements of the Health Department.

"YOU need not send any note stating that you 'hope your efforts will warrant my continuance as a subscriber,' for as long as I am in practice I want the REVIEW, and even if I were to cease to actively practice it would be a great pleasure to have it to read. *I would not be without it if it cost \$3 a month*, and the last year has been the best yet, and I want to congratulate you on publishing the best veterinary periodical I have ever seen."—(*H. S. Richards, V. S., Pittsburg, Pa.*)

WHY THE NEW ANÆSTHETIC IS CALLED STOVAINÉ.—The curious name of the anæsthetic "stovaine" is due to its discoverer, M. Fourneau. M. Fourneau was anxious to perpetuate his own name in connection with it, but as the anæsthetic was of the nature of cocaine and no compound resembling that could be contrived out of "Fourneau" he translated the name into its English equivalent of "stove" and added the necessary termination.—(*Daily Consular and Trade Reports.*)

DEATH OF MAJOR JOHN J. MCCANN.—Those veterinarians who attended the meeting of the American Veterinary Medical Association at Nashville, Tenn., in 1897 will learn with much regret of the death of the genial Major McCann, who did so much for the pleasure and comfort of those in attendance. He was especially kind and considerate for the ladies, and his happy disposition, wit and congeniality will ever be remembered by

those who were so fortunate as to visit the Southland just ten years ago.

At the matinee trotting meeting of the Goshen (N. Y.) Driving Club, Veterinarian J. F. DeVine was a prominent figure. Mounted upon "a spirited charger" he officiated as marshal of the course. Later the many-sided veterinarian changed his attire for the silk jacket, and the summary of "Class A" shows that, seated behind "Dexter," a horse regularly used in the livery business of N. H. Wilcox, he defeated four trotters in the fast time of 1:15 $\frac{3}{4}$ -1:16 for half a mile.

DR. J. M. WRIGHT, the new State Veterinarian of Illinois, begins his tenure of office by completely reorganizing his staff of assistants. He has called for the resignations of every Assistant State Veterinarian in the state without exception, with the purpose of appointing and reappointing only veterinarians specially qualified for the positions, which, under the new laws, are highly important. He has also appointed an Advisory Board consisting of Drs. A. H. Baker, Jos. Hughes, L. A. Merillat and John Scott (Peoria), before which all matters of importance will be discussed.

FRESH BEEF is a rare luxury in Alaska, and a firm of dealers at Seattle, Wash., recently shod seventy-two head of steers and shipped them by steamer to Valdez, Alaska, from whence they will be driven over the trail to Fairbanks. The shoes, by the aid of which it is hoped the steers can be driven over the pass, are sectional to fit the cloven hoofs. It is believed that with this protection the animals will withstand the long drive over the trail, about 380 miles, requiring about twenty-five days to accomplish it. The promoters of the scheme expect to make a handsome profit, as it is estimated that each animal will realize about \$1000 when dressed ready for sale in the gold-mining town.

COAL OIL AS A MEDICINE.—A. W. Baker, V. S., Brasher Falls, N. Y., writes: "In answer to Dr. C. C. Mills, Decatur, Ill., in the June REVIEW, page 364, on "A Case of Mystery," if the Doctor ever has another such case, let him give a one-ounce capsule containing Barbadoes aloes, 3 vij; calomel, 3 j; ginger, 3 ij. If there is no action in 36 hours, repeat the dose, omitting the calomel. After the physic has stopped, give twice a day one pint of coal oil, one pint of molasses, and one pint of lime water. Mix these well and wet the grain with them. If the patient will not eat, drench him. Follow this treatment up for a week or ten days. If the teeth are sharp, float them. In

the meantime he will find that the saliva will stop and the patient will begin to eat hay and grain. The trouble is due to the stomach. We had one in our hospital that did not eat for two weeks, but began to improve immediately after the above treatment."

A PROPHET HONORED IN HIS OWN COUNTRY.—In the



wonderful achievements of the veterinary profession of Pennsylvania, during the past few years (and notably during the past year) the name of Leonard Pearson stands out as the leader of a splendid band of devoted, self-sacrificing and successful veterinarians who know no such word as "fail." Under his generalship, with such lieutenants as W. Horace Hoskins, J. C. McNeil, Clarence J. Marshall, and W. H. Ridge, with a rank and file which includes almost the whole profession of the state, they have accomplished almost a veterinary revolution in the Keystone State. At the banquet of the Alumni Association of the University of Pennsyl-

vania, on the evening of June 19, the splendid leader was toasted and praised for his great service to this profession, while at the commencement exercises in the morning he was the recipient from the University of the degree of "Doctor of Medicine, *honoris causa*." If there was a Pearson in every state the profession would soon assume that position in the galaxy of the sciences which those who love it have dreamed of.

THE IDENTITY OF A DOG.—The following story from the Chicago *Daily News* is from its correspondent at Tokio, Japan, under date of April 4: "For more than four years a lawsuit has been carried on by two doctors over the possession of a dog. They have spent more than \$500 in lawyers' and court fees, though the animal in dispute is not worth \$15. Last year the disputants, both of whom are physicians, saw the folly of further continuing the litigation, and were about to give the dog to a third party. This attempt at compromise, however, has failed, and litigation has been resumed. Mr. Onishi, the defendant, now argues that there are still living the mother,

brother and sister dogs of the one originally belonging to him and the identity of his dog with the one in dispute can be established by bringing these doggies together. The court has accepted the proposal and hence the conference of dogs is about to take place in the law court. The court has also asked Dr. Iijima, zoölogist, Dr. Tokishige and Dr. Ishikawa, to witness the meeting of the dogs and give a decision. The learned doctors have accepted the invitation, so that it will be a conference not only of dogs but of doctors."

THE MISSING LINK IN THE EVOLUTION OF THE HORSE.—Determined efforts to find the missing link in the evolution of the horse are being made by an expedition from the American Museum of Natural History, which has just arrived in South Dakota. The filling out of that gap would be an achievement in paleontology which would be regarded as a triumph for any scientific institution, and there is much activity among museums and universities in the search for a perfect fossil skeleton of the animal required to complete the chain. There have been found on this continent a few small bones and teeth of this primitive horse which has been called the parahippus, but no specimens sufficiently perfect to establish the type have yet been unearthed. Its place in the scale of evolution is between the mesohippus and the protohippus. Through the efforts of Professor Henry Fairfield Osborn and other well known scientists have been traced the various steps. If a parahippus be found there will still be a few types missing, but the discovery of this ancestor will be sufficient to demonstrate an interesting and important theory of evolution. Mr. Albert Thomson is in charge of the field party, and three assistants have been assigned to aid him. The country to be explored is southeast of the Black Hills and has many outcroppings of the lower miocene period. The explorers will devote at least four months to their task. The museum authorities wish to complete the collection of evidence as rapidly as possible. Such pioneers in that branch of study as Professors Cope, Marsh and Osborn have attracted the notice of the scientific world by their achievements in tracing the horse from the primitive type the eohippus, a fox-like animal eleven inches in height, to the present thoroughbred. The search is of especial interest in the United States, as everything indicates that the horse originated in North America, and that all of his kind in the Old World are descendants of the steeds which went there over the land where now rolls Behring Strait.—(*New York Herald*, June 16.)

VETERINARY MEDICAL ASSOCIATION MEETINGS.

Secretaries are requested to see that their organizations are properly included in the following list.

Name of Organization.	Date of Next Meeting.	Place of Meeting	Name and Address Secretary.
American V. M. Ass'n.....	Sept. 10-13, '07.	Kan. City, Mo.	R. P. Lyman, Hartford, Ct.
Vet. Med. Ass'n of N. J.....	July, 1907.	Asbury Park.	W. H. Lowe, Paterson.
Connecticut V. M. Ass'n.....	Aug. 6, 1907.	New Britain.	B. K. Dow, Willimantic.
New York S. V. M. Soc'y....	Sept., 1907.	New York City	G. T. Stone, Middletown.
Schuylkill Valley V. M. A. ....	.....	.....	W. G. Huyett, Wernersville.
Passaic Co. V. M. Ass'n.....	Monthly.	Paterson, N. J.	H. K. Berry, Paterson, N. J.
Texas V. M. Ass'n.....	Call Exec. Com.	.....	E. L. Lewis, Waxahachie.
Massachusetts Vet. Ass'n.....	Monthly.	Boston.	F. J. Babbitt, Lynn, Mass.
Maine Vet. Med. Ass'n.....	.....	.....	R. E. Freeman, Dexter.
Central Canada V. Ass'n.....	July, 1907.	Ottawa.	A. E. James, Ottawa.
Michigan State V. M. Ass'n....	State Fair Week	Detroit.	Judson Black, Richmond.
Alumni Ass'n N. Y.-A. V. C....	April, 1908.	141 W. 54th St	T. F. Krey, N. Y. City.
Illinois State V. M. Ass'n.....	July, 1907.	Springfield.	N. I. Stringer, Paxton.
Wisconsin Soc. Vet. Grad.....	.....	.....	S. Beattie, Madison.
Illinois V. M. and Surg. A. ....	.....	Decatur.	C. M. Walton, Rantoul.
Vet. Ass'n of Manitoba.....	Not Stated.	Winnipeg.	F. Torrance, Winnipeg.
North Carolina V. M. Ass'n....	.....	.....	C. J. Fleming, Winston-Salem
Ontario Vet. Ass'n.....	Summer 1907.	Ottawa.	C. H. Sweetapple, Toronto.
V. M. Ass'n New York City....	1st Wed ea. mo	141 W. 54th St	W. Reid Blair, N. Y. City.
Ohio State V. M. Ass'n.....	.....	Columbus.	W. H. Gribble, Wash'n C. H.
Western Penn. V. M. Ass'n....	1st Wed. ea. mo	Pittsburgh.	F. Weitzell, Allegheny.
Missouri Vet. Med. Ass'n.....	.....	.....	F. F. Brown, Kansas City.
Genesee Valley V. M. Ass'n....	July, 1907.	Rochester.	J. H. Taylor, Henrietta, N. Y.
Iowa Veterinary Ass'n.....	.....	.....	H. C. Simpson, Denison, Ia.
Minnesota State V. M. Ass'n ..	July 10-11.	Mankato.	C. A. Mack, Stillwater.
Pennsylvania State V. M. A. ....	.....	Philadelphia.	C. J. Marshall, Philadelphia
Keystone V. M. Ass'n.....	Monthly.	Philadelphia.	A. W. Ormiston, 102 Her- man St., Germantown, Pa.
Colorado State V. M. Ass'n....	1st Mon. in June	Denver.	M. J. Woodliffe, Denver.
Missouri Valley V. Ass'n.....	.....	.....	B. F. Kaupp, Kansas City.
Rhode Island V. M. Ass'n....	June and Dec.	Providence.	T. E. Robinson, Westerly, R. I.
North Dakota V. M. Ass'n....	.....	.....	C. H. Martin, Valley City.
California State V. M. Ass'n....	Mch. Je. Sep, De	San Francisco	Chas. Eastman, San Luis
Southern Auxiliary of Califor- nia State V. M. Ass'n.....	Jan. Apl. Jy, Oct.	Los Angeles.	[Obispo. J. A. Edmons, Los Angeles.
South Dakota V. M. A. ....	.....	.....	E. L. Moore, Brookings.
Nebraska V. M. Ass'n.....	.....	.....	Hans Jensen, Weeping Water
Kansas State V. M. Ass'n....	Jan. 1908.	Manhattan.	Hugh S. Maxwell, Salina.
Ass'n Médéciale Vétérinaire Francaise "Laval,".....	1st & 3d Thur. of each month.	Lect R'm La- val Un'y Mon.	J. P. A. Houde, Montreal.
Province of Quebec V. M. A. ....	.....	Mon. & Que.	Gustave Boyer, Rigand, P. Q.
Kentucky V. M. Ass'n.....	Nov 19, 1907.	Not decided.	D. A. Piatt, Lexington.
Washington State Col. V. M. A.	Monthly.	Pullman, Wa.	Wm. D. Mason, Pullman.
Indiana Veterinary Association.	An'l Jan., '08	Indianapolis.	E. M. Bronson, Indianapolis.
Louisiana State V. M. Ass'n....	.....	.....	E. P. Flower, Baton Rouge.
Twin City V. M. Ass'n.....	2d Thu ea. mo.	St P.-Minneap	S. H. Ward, St. Paul, Minn.
Hamilton Co. (Ohio) V. A. ....	.....	.....	Louis P. Cook, Cincinnati.
Mississippi State V. M. Ass'n..	.....	.....	J. C. Robert, Agricultural Col.
Georgia State V. M. A.	July 4, 1907.	Atlanta.	L. C. Willoughby, Experiment
Soc. Vet. Alumni Univ. Penn..	June, 1908.	Philadelphia.	B. T. Woodward, Chicago.
Virginia State V. M. Ass'n....	.....	.....	S. C. Neff, Staunton.
Oklahoma V. M. Ass'n.....	.....	.....	W. H. Martin El Reno.
Veterinary Practitioners' Club.	Monthly.	.....	A. F. Mount, Jersey City.
Vet. Ass'n Dist. of Columbia....	Last W. ea. mo.	2116 14th St	F. M. Ashbaugh, Wash., D C
B. A. I. Vet. In. A., Chicago.	2d Fri. ea. mo.	Chicago.	R. J. Stafford U. S. Yards.
Arkansas Veterinary Society....	.....	.....	B. H. Merchant, Little Rock
York Co. (Pa.) V. M. S.	Sept 3.	York, Pa.	E. S. Bausticker, York.
Philippine V. M. A.	R. H. McNullen, Manila.

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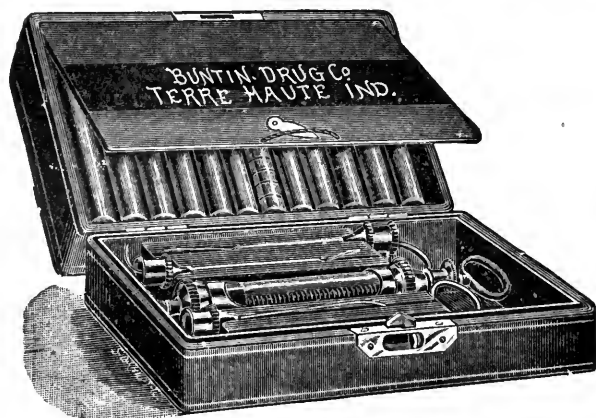
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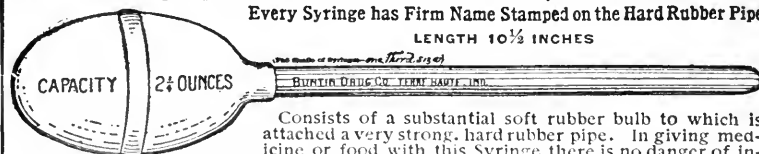
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118	Aconitine, Crystals.....	1-4 gr.	27
159	Arecoline Hydrobrom.....	1/2 gr.	1 00
160	Arecoline Hydrobrom.....	1 gr.	1 80
101	Atropine Sulphate.....	1-4 gr.	15
121	Atropine Sulphate.....	1-2 gr.	18
119	Atropine Sulphate.....	1 gr.	33
158	Barium Chloride Comp (Ellis).....		18
	{ Barium Chlor.....	7 grs. }	
	{ Digitaline.....	1-12 gr. }	
152	Cardiac Tonic.....		25
	{ Digitaline, Pure.....	1-10 gr. }	
	{ Sarsaparilla Sulph.....	1-5 gr. }	
	{ Strychnine, Nitrate.....	1-8 gr. }	
102	Cocaine Muriate.....	1 gr.	35
124	Cocaine Muriate.....	1-1/2 grs.	45
125	Cocaine Muriate.....	2 grs.	55
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	(One tablet dissolved in 1 drachm of water makes an 8-per cent. solution.)		
103	Colchicine.....	1-4 gr.	60
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	{ Morphine Sulph.....	2 grs. }	
	{ Atropine Sulph.....	1-4 gr. }	
	{ Aconitine Cryst.....	1-20 gr. }	
104	Coniine Hydrobromate.....	1-2 gr.	43
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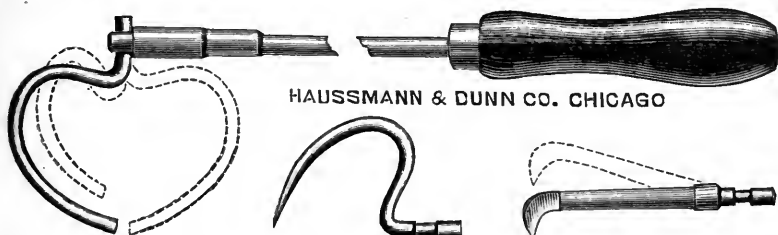
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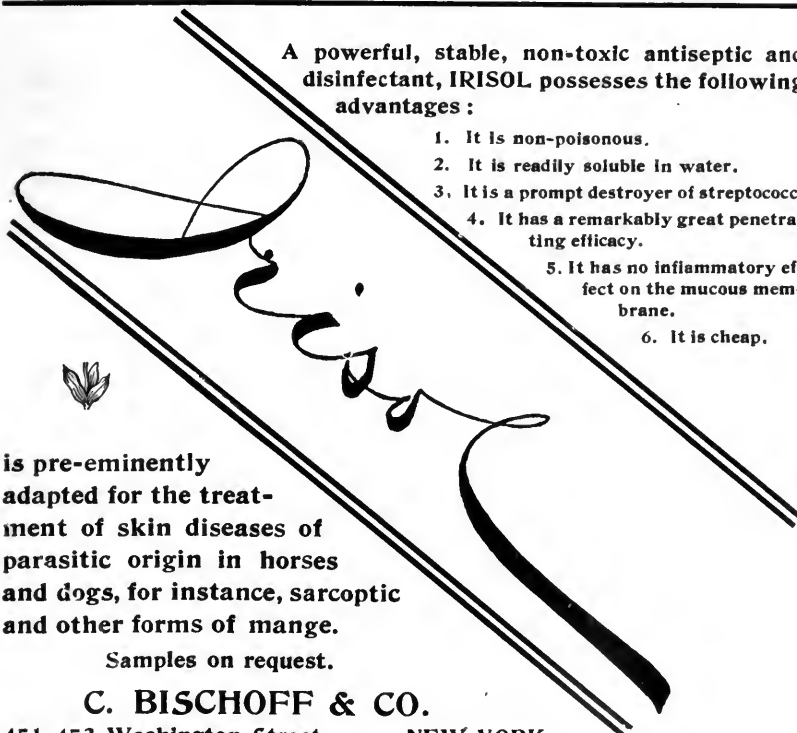
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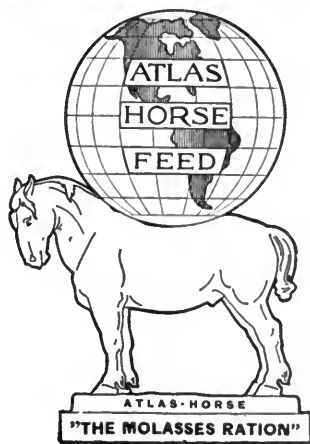
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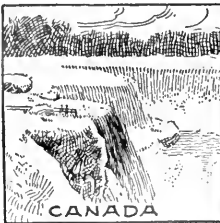
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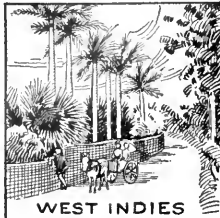
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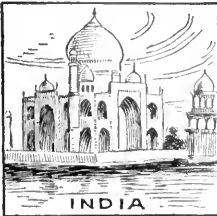


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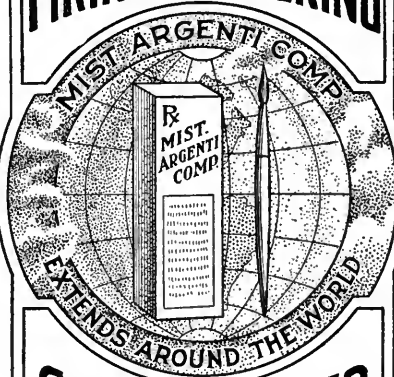
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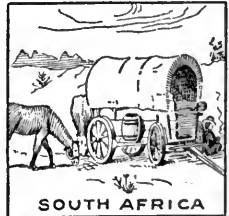
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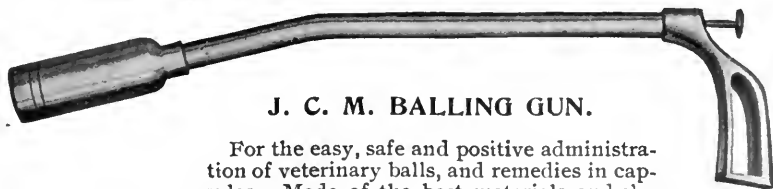
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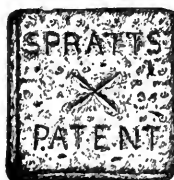
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AUGUST, 1907.

EDITORIAL.

EUROPEAN CHRONICLES.

PARIS, FRANCE, June 15, 1907.

HOW VETERINARIANS ARE APPOINTED IN THE FRENCH ARMY.—The excellent article of Dr. C. H. Jewell that I have read in the "Proceedings of the American Veterinary Medical Association" for 1906, has suggested to me that perhaps some facts relating to army veterinarians in France might prove of some interest to American army veterinarians, and, after inquiries and with documents obtained from official sources, I am pleased to write the present article.

The enlisting of veterinarians for the French army differs very much from what it is in the United States. There is in France a cavalry military school, situated in a charming little town of the department of "Maine et Loire," named Saumur, which, among the objects for which it was instituted, has that of completing the technical instruction of candidates to the appointment of army veterinarian, of teaching them equitation and of initiating them into regimentary duties. These candidates are recruited from veterinarians in private practice, from those that are serving their military services as privates and from graduating students of veterinary schools. The places are obtained by competition. The candidate has to submit himself to two examinations, besides presenting vouchers as to citizenship, age, social condition, physical qualities. He must hold a diploma from one of the three schools in France or be a candidate for it. He must sign a contract of six years' military service from the time he leaves Saumur. The examinations are written, oral and practical. The first is on a question of medical or surgical pathology, hygiene or

physiology. It is a general question. The second is on any subjects pertaining to veterinary medicine. The third takes place on a healthy or sick horse. Failure in the first examination excludes the candidate from the others.

Nominations of admission are delivered by the Secretary of War. While in stage at the school, the young army veterinarian is under the direction of the veterinary major of the institution.

The program of instruction is regulated by the Secretary of War. At the end of their period of studies, examinations are to be passed and the successful candidates are appointed in various regiments of artillery or of cavalry. The unsuccessful may be allowed another stay and another trial, providing the failure has been due to sickness while at the school.

The length of attendance to the school is of two semesters, after which a last examination is demanded before a board composed of a general or colonel, commanding the school and acting as chairman, one principal veterinarian of first class and three veterinarians of second class, acting as members.

The examinations are divided into four seatings: one written consisting of making a report to a military authority, upon a practical subject of practice, surgery or hygiene; one oral, upon any of the parts of the curriculum of the schools; one practical, upon the external form of the horse, surgery, hygiene, horse shoeing or meat inspection, and the fourth on equitation.

The curriculum is composed of subjects exclusively military and practical, classical courses taught in the veterinary schools being strictly avoided. It covers the following principal points:

Legislation and Administration.—History of military veterinary medicine, laws, duties in garrison, in the rank, in campaign, redaction of reports, etc.

Military Pathology and Epizootics.—Diseases prevailing among army horses, contagion, military veterinary surgery.

Inspection of Meats and of Preserves.—Visits to slaughter-houses, inspection of all food as applicable to the army.

External Forms of the Horse.—Zootechny, military equine hygiene, stables, bivouacs, harnessing, breaking, horse shoeing

with history, foot, various modes of shoeing, clinics, pharmacology, ophthalmology, microbiology.

Equitation.—Topography.

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Once appointed assistant or aid veterinarian, in coming out of Saumur, the road is open. He begins with the rank and pay of second lieutenant. That of colonel is the top of the ladder!

The following is the number of army veterinarians in the French Army:

The stage aid veterinarians of Saumur vary in number. There are 226 assistant or second veterinarians with rank of sub lieutenants or of lieutenants. There are 184 first veterinarians with rank of captains. Forty-two major veterinarians ranking as majors. Fourteen principal veterinarians of second class with rank of lieutenant-colonel and one principal veterinarian of first class with rank of colonel. Mr. J. Jacoulet stands to-day as veterinary principal of the army and it is to him that I owe the principal information referred to above.

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ADRENALIN PROLONGS LOCAL ANÆSTHESIA.—The great results that are obtained with injections of cocaine as a local anæsthetic have been known for a long time, and to-day many practitioners are resorting to it either to abolish temporarily the sensibility in a field for operation or to localize a pain in the territory of action of a given nerve.

There have been, however, objections made against its use—namely, its toxicity is quite dangerous, and again, while it is quick in its action, it being absorbed rapidly, its elimination is also quite rapid and as a consequence its anæsthetic effects are of short duration.

Fortunately, careful researches have demonstrated that if a small quantity of adrenalin is added to a solution of cocaine, its absorption will be moderated a great deal and local anæsthesia can be produced which will last much longer—some say several hours.

It is on this very interesting subject that Prof. Dupuis and his adjunct, Vanden Eeckhout, have attracted attention in an article, published in the *Annals of Bruxelles*, headed: "Practical Method of Obtaining a Lasting Local Anæsthesia—Association of Adrenalin with Local Anæsthetics."

Cocaine is essentially a local anæsthetic. Injected on the tract of a nerve, it abolishes the sensitive conductivity of the nervous branches, and the animal behaves as if all painful excitability of the peripheric extremities remained unnoticed. Injected in the connective tissue, the solution is rapidly absorbed, but its effects last comparatively only a short time.

Adrenalin is a general and local vaso-constrictor. Injected in small quantity in the circulatory current, it produces a vaso-constriction in the entire vascular system. Applied on mucous membranes, such as the conjunctiva, or pituitary, it produces a marked ischemia which allows operations to be performed without hæmorrhage.

The vaso-constriction that adrenalin promotes has for results not only to interfere with its being itself absorbed, but it also prevents the too rapid absorption of the cocaine through the whole organism and as a consequence the local anæsthetic effects last longer.

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This has been proven by experiments on animals, which received toxic doses of cocaine alone or of cocaine mixed with adrenalin. The former animals died a few minutes after taking the toxic dose, while the others recovered or died only after 12 or 18 hours.

These experiments had been made on guinea-pigs, they were conclusive, but Prof. Dupuis with his adjunct repeated them in a comparative manner, so as to control their correctness. Horses were selected and the plantar nerves were the seat where the test was applied. With the solution of pure cocaine, they obtained an anæsthesia that began about 15 minutes after the injection and lasted between 20 and 40 minutes. The anæsthesia produced with a mixture of cocaine and adrenalin began also after 15 min-

utes, but seemed to be stronger than the one with cocaine alone and lasted *complete* between two and a half and three hours.

These facts were observed on the subjects of experiment. Two hours and a half after the injection, nervous and very irritable animals appeared to ignore entirely the deep introduction of sharp needles in their muscles, in those where the branches of the anæsthetized nerve were distributed, while the same manipulations made in other regions made them react very strongly.

Therefore, by this method a local anæsthesia can be obtained lasting sufficiently long to allow one to perform very painful operations which may require a long time for their execution, as, for instance, all kinds of operations on the foot.

The following solution is recommended by Prof. Dupuis : Muriate of cocaine, 25 to 30 centigrams; muriate of adrenalin at 1/1000, five drops; distilled water, 10 cubic centimeters.

For the anæsthesia of the foot, half of this solution is injected along each plantar nerve. The practitioner may prepare the mixture himself when it is needed or have it on hand, as the solution will keep, if placed in the dark. All cloudy or tinted solutions must be thrown away.

Stovaine mixed with adrenalin has given the same results as those obtained with cocaine. Same effects and local anæsthesia, which may last from two and a half to three hours.

It is probable that the same addition of adrenalin to the other succedaneums of cocaine, such as alypine and novocaine, would give similar results and find similar applications.

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RABIES NOT ALWAYS CHARACTERISTIC.—Rabies is a protein-form disease, which is characterized by extremely varying symptoms, and yet it has been possible to classify it in such a manner that two forms of the disease are admitted, one raving and the other paralytic. But between these two forms there are numerous cases which are not so well characterized and in which peculiar manifestations are observed, giving rise to atypical cases, against which the daily practitioner must be on guard. In the *Journal of*

Zootecnie, Prof. Nicholas has related four of those cases, which deserve special notice.

In one, the animal showed opisthotonos, carrying his head to the right. He had such a tendency to go forward that if left alone he would go ahead until stopped by some obstacle in his way. He then would remain in that position and if changed he would immediately resume his walking, pushing forwards. He died in two days and in the position he always took—namely, standing against the walls of his cage. Rabies was confirmed by post-mortem and inoculation.

In another case, the dog was constantly moving in a circle, remaining indifferent to everything around him, to the voice of his master or to any food offered to him. He barked no more. Death in two days and diagnosis confirmed by post-mortem and inoculation.

In a third animal somewhat similar symptoms were observed. Anorexia, continuous moving in a circle to the left. Slight dropping of the lower jaw. Similar death and similar confirmation.

The last case was that of a goat which had been inoculated in the eye. During twenty-four hours and before the apparition of the pathognomonic symptom of rabies, the animal presented a continuous movement of propulsion and retraction of the tongue, in such a way that for two or three minutes the tongue remained hanging and then suddenly was retracted into the mouth. Same condition as in the others.

But it is not only in its manifestations that rabies varies, but the duration of its evolution is also subject to change. It is said to run its course rapidly. For the raving form the duration is generally admitted as being of two to ten days, and a period of four to five days marks the limit of its duration. With the paralytic form the disease progresses more rapidly in a general way, and death occurs ordinarily by asphyxia in two or four days. Two cases are recorded by Nicholas which differ much from these averages.

A slut is much changed in her manner. Quiet she was and

now she is snappish; she refuses her food; her voice is changed. A month before she has bitten another dog. Rabies is the diagnosis. She became raving and lived thirteen days before death occurred.

In another animal the duration of the disease was of eleven days.

It seems that after these, the general belief that one dog, suspected of rabies and that had not died in the admitted length of time, say from two to five days, was free from the disease and could be without danger returned to his owner, demands to be corrected, as after all it may be wrong and an animal that would have been declared healthy, might a few days later be taken again or be still a dangerous animal, liable to give his disease to other living beings.

Nicholas records also the case of a dog that died suddenly. At the autopsy intraperitoneal hæmorrhage was found as the cause of death. The day before dying, the dog had been dull, snappish and had bitten a cat and a child in the house. Rabies was suspected and confirmed by the lesions of the brain and inoculations to rabbits.

The conclusions of all this are: First, that rabies may assume various forms during life, and be manifested by various forms of nervous symptoms; second that the duration of the disease is not always that which is classically admitted, and third that the lesions are not always characteristic and may be concealed.

All these comport with them great circumspection in making a diagnosis and a prognosis.

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INOCULATIONS AGAINST RABIES.—Physicians and veterinarians, the world over, are acquainted with the recent experiments made in relation to the treatment of rabies, and in its proper place, I have told the readers of the REVIEW how radium was recommended by Tizzoni and Bongiovanni as an agent which would not only destroy the rabid virus, but arrest the progress of the disease in rabbits, and again how others demonstrated that radium was powerless.

Doctor Remlinger, of Constantinople, who is always investigating rabies, has published in the *Revista Pasteur* an article on the treatment of the disease in *all domestic animals*.

Wondering at the fact that when persons are bitten by an animal suspected or afflicted with rabies they are treated for this affection, why, on the contrary, are the cases so rare when animals are vaccinated against the disease. Herbivora get immunity by the intrajugular injection of rabid virus, *why* not vaccinate all animals?

Remlinger has tried a new method: A mixture of anti-rabid serum and fixed virus. The serum is obtained by injections of increasing doses of virus in the jugular of a sheep. This mixture is entirely harmless for rabbit and for man, and at the dose of 60 c.c. it gives immunity to a sheep, even three days after an intra-ocular inoculation. This new method of inoculation, made under the skin, is easy and not dangerous—a double advantage over the intrajugular inoculation.

Horses, cattle, goats as well as sheep could be vaccinated and treated in the same manner, and a revision of the sanitary legislation on rabies be the result.

The immunity granted is such that animals resist cranian inoculation. In relation to dogs, the law does not allow them to be treated. Why should they not?

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A Mr. Marie, of Paris, says Dr. Remlinger, has applied to dogs the vaccination with the mixture of fixed virus and anti-rabid serum. One injection of 10 to 12 c.c. of mixture in the proportion of $\frac{1}{3}$ of virus to 2 of serum, is sufficient to preserve the dog for one year. The rapidity of the effects is wonderful. It is such that three days after the injection of the mixture, the dog can receive with impunity an intra-ocular inoculation of fixed virus.

The manner to prepare the serum is very simple. Sheep is the subject for it. One began by injecting in the jugular a small dose of virus; after three or four inoculations of gradually increasing doses immunization is completed by subcutaneous injection.

tions of one brain of a rabbit dead with rabies in an emulsion made with 400 c.c. of water. When the animal has received from 30 to 40 brains, its serum will neutralize an equal volume of fixed virus. The serum had better be tested before being used. To keep the immunizing properties, inject the sheep every day with one brain of a rabid rabbit.

At Constantinople, when a dog bitten by a rabid animal is brought to him, Dr. Remlinger treats him as follows: "He takes 30 centigrams of rabid virus from the brain of a rabbit, dead by inoculation of fixed virus; he triturates them aseptically with 30 grams of water, filtrates the liquid, adds 30 c.c. of serum from immunized sheep and inoculates the bitten animal under the skin."

Should this become admitted in general practice, immunization against rabies for all animals could be realized!

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THE PART OF NATURE IN RECOVERIES.—Under the heading of "On Spontaneous Recoveries," Mr. E. Wallis Hoare, F. R. C. V. S., has published in the *Veterinary Record*, an article which ought to be read by all young men who enter the profession.

I have not the honor of knowing Mr. Hoare, except by his writings—many indeed are his articles that can be found in all the English veterinary journals; but I fancy him one who, after many years of practice and of close observation, is desirous to guard the recent graduate, principally, against the tendency that many have, when coming out of school, of knowing it all. And yet, in "Spontaneous Recoveries" there is also a warning to those for whom the great "*I am*" or the ever "*I have done it alone*," is the evidence of a blind conceit, refusing to Dame Nature that which is due to her, that which she certainly did alone.

Of course, evidences of spontaneous recoveries are not of every-day occurrence; but yet they are met with in cases that have been pronounced incurable or not worth treating. As an example, Mr. H. mentions quittor. Are they not many among us who have advised the owner of a horse with a bad quittor, one of long standing, not to go to the expense of treatment, to sell

the horse or to send him to the country. Yes, he did go to the country, and came back cured and radically cured! Are they not in great numbers also, those who could mention cases of lameness which have recovered simply by rest, by being simply sent to grass? Spontaneous recoveries, indeed!

And in the medical cases, have we not also spontaneous recoveries? Perhaps more frequent than in the surgical. Mr. H. mentions spasmodic colics, that so often recover before the practitioner reaches them. A peculiarity which suggested to a professor addressing his students: "If called at night for such a case, hurry up to it, as the animal may get well before you get there; and, besides your being disturbed at night for nothing, you would lose the opportunity of a larger fee."

"A case of nasal discharge of undoubtful diagnosis recovered spontaneously to our knowledge," says Mr. H., and tetanus, and hydrophobia, and how many more—way down to the faddists who, to asepsy or antisepsy alone, attribute the results that are obtained in some surgical cases, when comparing them with similar ones in country practice, where most adverse circumstances prevail, and yet as good results are obtained. Has not Dame Nature also something to do with them, and cannot spontaneous recovery be at the bottom of all?

The conclusive remarks are quite to the point and worthy of one who no doubt realizes the real value of the application of medical knowledge: "Real professional progress can only be brought about when we recognize the natural progress of recovery and appreciate the fact that our influence over disease has limitations."

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BIBLIOGRAPHIC NOTES.—The United States Department of Agriculture has issued its Twenty-second Annual Report of the Bureau of Animal Industry, for the year 1905. It is the first that is published since Dr. Melvin has occupied the position of Chief of the Bureau—Chief of the Sanitary Service of America. The volume is much smaller than those of preceding years, various statistics already published having been left aside. As it was

during the year 1905 that the resignation of Dr. Salmon took place, the book opens with the report of the Chief of the Bureau for the fiscal year ending June 30, 1905—Dr. Salmon still acting—and presents to the reader: Tuberculosis of hogs, experiments with tubercle bacilli, distribution of tuberculin, black leg, hog cholera, Texas fever, mycotic stomatitis, rabies, inspection of meats, etc. I notice that nothing is said of anthrax fever. As if it did not exist in the States! And I hear that large quantities of vaccine matter are sold by some European firms. If it is, there must be use for it and the conclusion must be that anthrax fever does also exist. Among the special works carried out by the officers of the Bureau are: Notes on the cattle tick and Texas fever, by Dr. E. C. Schroeder; another from the same and Dr. W. E. Cotton on the persistency of the Texas fever germs in the blood of Southern cattle, and then a number of others of less importance to the veterinarian, such as on the production of milk, on cheese factories, breeding of cattle, Welsh black cattle, baby beef cattle, etc. There is the usual list of registered live-stock in the United States, that of the contagious diseases of domestic animals in foreign countries, etc. The illustrations are perhaps less numerous, but still always superior to many similar publications.

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Among other publications that I have received I must mention the Annual Report of the Chief State Veterinarian of North Dakota for the year ending Nov., 1906 (Dr. Vanes). "Abstracts of Work Done in the Laboratory of Veterinary Physiology and Pharmacology from the New York State Veterinary College," Dr. P. A. Fish, among which I remark "Glanders and Bovine Serum," by C. L. Roadhouse and Leigh Giltner. Circular No. 108 from the B. A. I. on Trichinosis; danger of the use of raw pork for food, by B. H. Ranson; Circular No. 106 offering for sale a large number of publications from the Bureau. The "Intelligent Management of Plantation Stables," by W. H. Dalrymple, and finally the first number of the first volume of a Russian paper, published by the Veterinary Institut of Dorpat under the title of *Zeitschrift für Wissenschaftliche und Practische*

Veterinar Medicin, traduction from the Russian type, which our friends could not possibly read nor our printers reproduce. May these few words carry to our new *confreres*, the expression of our feelings of welcome and wishes for its success.

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And as I was about closing, I received a little book to which I must do justice even if the space allowed to me is more than filled. The "Directory of the Veterinary Surgeons of Pennsylvania" is before me with the list of the members of the State Board of Veterinary Medical Examiners and the names and addresses of *eight hundred and thirty-five* (835) registered veterinary practitioners. They are arranged by alphabetical order and then by counties. Of all those, 50 did not renew their licenses, 17 have died and 5 retired, leaving 763 actually practising. The little directory has been compiled by Dr. W. H. Hoskins, and that is to say how strictly correct it is. In undertaking this gathering, the Doctor assumed a great deal of work and it is a great compliment to him to have so well succeeded! It is to be hoped that similar work will be accomplished in other States, as they all will allow of a better knowledge of the real forces of our profession, and no doubt give assistance to a more intimate acquaintance between the many members in the various States and in the different parts of the country. A. L.

THE A. V. M. A. AT KANSAS CITY.

We have pleasure in presenting to our readers in this number the very attractive program arranged for the forty-fourth annual meeting of the American Veterinary Medical Association, to be held at Kansas City, Mo., September 10, 11, 12 and 13, and we submit that never has a convention of the National Body offered such promise of interest, value and support as the one which is now so near upon us. Called to assemble in the heart of the Middle West, at a point equally accessible to all sections of the country, in the midst of a vast veterinary population, consisting not only of practitioners, but of an army of Federal in-

spectors, where the association spirit is strong and sincere, it seems that the meeting of 1907 must in the very nature of things place a new record for the inspiration of future years.

The literary program given out by Secretary Lyman embodies every phase of professional work, from the scientific discussion of the agglutinating power of glandered blood serum to the recital of the symptoms of an ulcerative disease of the lips and legs of sheep, from a consideration of the duty of the State toward veterinary education to the simple tale of "John Smith and His Misfortunes," from a *résumé* of "anthrax vaccines" to practical conclusions upon applied surgery.

Not only will the mind be broadened, refreshed and ennobled by the great mass of papers and discussions by the foremost veterinarians of America, but the local committee has borne in mind the fact that this year we meet in Missouri, and they will *show us* some of the results of diseased processes. And so, in the great packing plant of the Armour Company, the Federal inspectors located at Kansas City have collected a vast array of pathological specimens in the course of their duties. The members and visitors will be the guests of this company for the morning of the third day, and those who have read of and have conceived ideas of what a great packing house is like, will have the opportunity to inspect a model one throughout all processes of preparing meats and meat products for home and foreign consumption. Furthermore, the visit will offer not only relaxation and instruction, but will be fraught with social pleasures, for it is announced that the company will tender their guests a luncheon at the noon hour, and, with the ladies in attendance, the occasion will wind up in a delightful diversion.

If the surgical and medical clinics of the A. V. M. A. have year by year increased in value through greater facilities and a higher conception of the demands of modern surgical methods, that at Kansas City may be confidently relied upon to justify the faith of those who have ever held them to have a proper place upon the program of this organization. With the excellent equipment of the Kansas City Veterinary College, the ripe experience

of those in charge of the details, the unlimited material of the Western metropolis, the presence of the most renowned surgeons of various sections of the country, there is every reason to expect that the acme of such events will be recorded when the story of the clinic of 1907 is written. America was the first country in the world to inaugurate clinics at association meetings, and it is the sincerest flattery that foreign countries are following in her footsteps, reluctantly acknowledging that they are both educational and necessary to create and hold the interest of the members of such organizations. The eyes of Europe are watching the development of our surgical clinic, and we are to show them that in this progressive land we will bring it to its highest perfection.

It is unnecessary here to recount the splendid round of social distractions which has been arranged to throw a halo around the more serious work of the convention, as it is given in detail elsewhere. It is sufficient to state that every moment of time not occupied by professional events has been anticipated by the Kansas City veterinarians, and in the most pleasant and congenial company convention week will be a red-letter one in the life of every one who loves his profession and the splendid manhood of its *personnel*.

The REVIEW offers its congratulations to the profession upon the prospects of the greatest convention of modern times.

On to Kansas City! Let none stay away who can possibly attend!

OUR APOLOGIES TO DR. PEARSON.

With a sincere desire to pay a well-deserved tribute to the Dean of the Veterinary Department of the University of Pennsylvania, on the occasion of his recent decoration by the great institution of which he is so valuable a factor, and upon the successful completion of his remarkable campaign before the legislative solons for recognition of the needs of the veterinary profession of the Keystone State, we sought to make our remarks

more impressive by attaching a portrait of the distinguished subject. The picture which was sought to be reproduced was found in one of the Philadelphia locals, and was regarded as an excellent likeness of Pearson. Our artist said that it would be necessary to "touch it up a little" to bring out the features more plainly. The results were disastrous, for the picture would do just as well for half a dozen veterinarians we could name. Some who saw it, without reading the accompanying remarks, guessed that it was Marshall, others said it was George R. White, and another, with a little stretch of the imagination, believed it was Melvin with his mustache shaved off. Pearson himself facetiously remarked that it was "a good picture, but a poor portrait." While humbly apologizing for the offence, the REVIEW feels somewhat relieved by the circumstance that it occurred after the close of his work at Harrisburg, for he could scarcely have won the battle with such a handicap.

THE "REVIEW" IN A "NEW DRESS."

The REVIEW presents itself to its many readers this month in much more worthy garb for its valuable contents. Its collaborators and correspondents have done so much to make it a great magazine that the publishers have for some time felt that its typographic appearance was not in keeping with the excellence of their contributions, and so they have arranged with one of the largest and best establishments in this country to have it printed by the linotype process, whereby new type will be made for each number. In the words of a well-known manufacturer of toilet powder, "We could not better the contents, so we improved the box." While the REVIEW is one of the oldest veterinary periodicals printed in the English language, it is determined to be also one of the youngest.

St. LOUIS has a new veterinary hospital for its fire department, located at North Market and Twenty-second streets. It has a capacity of 50 animals, and the veterinarian, Dr. John Kelly, says the *St. Louis Times*, will reside in the building.

ORIGINAL ARTICLES.

THE EVOLUTION OF THE HORSE.

By B. M. UNDERHILL, V. M. D., MEDIA, PENNSYLVANIA.

Presented at April Meeting of the Keystone Veterinary Medical Association of Philadelphia. Published in "Proceedings of Delaware County Institute of Science."

To read that the ancestors of our horses hundreds of thousands of years ago had three toes, were no larger than sheep and were probably striped may be entertaining, but unless such facts are brought into connection with principles that arrange them in their relation to other facts, they can only serve to conduct us through mere description to blank amazement. The popular treatment of topics of science has been objected to on this score, and much that has been so written upon the beginnings of the horse is so fragmentary and scattered that it can only bring to the unprepared mind a disordered conception of the subject. I am quite incompetent to write anything more profound, but have attempted in this brief paper to present connectedly and relatively the outlining facts which I have derived from a number of authors who have recorded the results of more recent research in the fossil fields of North America. The evolutionary line is that of Professor Marsh, while for the description of fossils I have relied principally upon the study of specimens at the American Museum of Natural History at New York.

When Sir Isaac Newton demonstrated gravitation from falling apples it did not apply to apples alone, but the law which he asserted was a universal one. And so if evolution had been demonstrated only by what we know as to the origin of the horse, this would be sufficient to establish it as universal in its application. Animal evolution proceeds through ages of geological time from the general to the special, and the horse furnishes us the best exemplification in existence of this evolutionary law. In America, where the record is most complete, he has been traced

from the Mammalian Dawn down to historic times through eight successive stages without a break of importance in the line.

It is of course not to be inferred that the distinguishing characteristics in this series were abrupt departures from prevailing forms; the horse with one functional digit between two that were useless was not a direct product of the preceding genus in which the two lateral hoofs reached the ground and contributed to support, nor did this three-hoofed horse thus descend from the one which stood upon four. Between these stages there was an intermediate series in which the tendency to discard what had become an incumbrance went hand in hand with adaptive development. If a variation is of advantage in the struggle to sustain life, nature tends to retain it and intensify it in future generations until it finally predominates over the older forms. To be sure nature also tends to propagate defects, but this retrogression cannot be long sustained amid the constantly unfolding enemies to life, and, as the contest becomes sharper and the range more restricted, only those responsive to the change can survive. It is a clear application of Spencer's "Survival of the Fittest."

The significance of these variations as factors in the evolution of species can be better appreciated if we consider the vast stretches of time in which they were having their influence. As an example we may take the case of the so-called wolf-tooth of our present-day horses. In the ancestral types this first of the four premolars was fully developed and had its opposing tooth in the lower jaw. As the lower tooth was the first to go the atrophy of disuse attacked the upper one, though it remained constant for a long period of time. Then an occasional individual appeared without it, later as many appeared without it as with it, and still later it had disappeared from most all and became very rudimentary as at present. The process of discarding this tooth absolutely has already occupied a period of probably not less than 50,000 years, and it is still unaccomplished. Thus it will be clear to us that in the slow progress of evolution, a long series of related forms must have intervened between the stages that we recognize as genera.

Inserted below is a tabular view of the American and European generic lines in their relation to each other and to the divisions of geological time. The Middle Era, in which we find the first mammals, is included.

Eras.	Ages.	Periods.	American Equine Series.	European Equine Series.
Cenozoic	{ Quaternary... {	Recent..... {	Equus	Equus.
		Pleistocene... {		
	{ Tertiary {	Pliocene..... {	Pliohippus.....	Hipparion.
			Protohippus.....	
		Miocene..... {	Miohippus.....	Anchitherium.
			Mesohippus.....	
		Eocene..... {	Epihippus.....	
Mesozoic	{ Cretaceous.... {		Orohippus	
			Eohippus	Hyracotherium.
	{ Jurassic..... {	Reptiles, First Mammals, Birds.		
	{ Triassic {			

Mesozoic, 7,000,000 years; Tertiary, 3,000,000 years; Quaternary, 50,000 years (rough approximation).

Figuratively speaking, our highly individualized animals of to-day represent the topmost twigs of a tree. In the preceding branches there is a tendency to combine these characteristics in more comprehensive types and we find ancestral forms the more generalized as we pass downward towards the trunk. At the points where we meet the first Ungulate we find evidences that a branching has already taken place into odd-hoofed (Perissodactyla), where the middle toe is the centre of support, and into pair-hoofed (Artiodactyla), where the support is distributed between the middle and fourth. The paleontologist can by most probable outlines trace these two groups to the present, where they reach their highest expression in the Equidae and Bovidae. Primitive Ungulates first appear in the lowest Eocene formations of the western lake basins. These belong to a single genus, *Coryphodon*,

having five toes in front and behind with the third or middle toe decidedly the best developed, showing the odd-hoofed tendency. But this largest mammal of the Lower Eocene sheds very little light upon the five-toed beginnings of our little four-toed horses and it leaves a gap yet to be filled to the first incomings of the hoofed animals. Indeed the obscurity is general as to the source of the mammalian assemblage that here makes its appearance. Though it has left us a record through the Tertiary Age that is almost complete, below the Tertiary it seems lost, only a few diminutive mammals of very low type having been yielded thus far by the Cretaceons. The case is thus referred to by Le Conte: "It is impossible to explain this unless we admit times of rapid evolution. But even this is not sufficient. We must suppose, also, that these new types appeared here in America by migration about the end of the Cretaceons from some other country, where we hope yet to find the intermediate links."

Over forty years ago a skull was found in the Lower Eocene of England belonging to an animal which was at that time named the Hyracotherium by Professor Owen and which has since been recognized by paleontologists as representing the most primitive stage known in the horse's ancestral line. The molar teeth have six cusps on the upper and four on the lower ones and these are just beginning to fuse into crests. In each jaw the fourth premolar has three cusps, the third two, and each of the first and second premolars one. The teeth are short crowned and like those of omnivora. The fact that this skull is more primitive than any yet found in America would seem to indicate that the original stock was Eurasian and that it migrated eastward, by land connections then existing, to North America, here to continue its evolution. The succeeding genera in North America are increasingly numerous, while in Europe the line is disconnected, its occasional representatives probably being derived from those that had found their way westward from this country.

The American series starts with the *Eohippus* or "Horse of the Dawn." It comes from the Lower Eocene of Wyoming and New Mexico and is much more available for study than the Hyra-

cotherium. It is about the size of our domestic cat and is like the Hyracotherium except that the fusing of the cusps into crests has progressed and the fourth premolar is beginning to look like a true molar. The hand of this animal has four functional fingers, while the thumb is rudimentary and reduced to a splint. The foot has three functional toes, no trace left of the first toe, and the fifth reduced to a splint. It might be explained parenthetically that terms applied to the human digits are used here in describing the front feet in order that we may more readily follow these changes by reference to our own fingers.

The second in the series is the Prohippus or "Mountain Horse." It is found in the Middle Eocene of Wyoming and in size is somewhat smaller than a fox. Like the Eohippus it has four functional fingers and three functional toes, but the splint of the thumb has disappeared as has the splint of the fifth toe. The radius and ulna and tibia and fibula are still distinct. The crests on the molars are clearer than in the preceeding stage, and the last premolar is like the true molars, while the next to the last is beginning to become so. The canines are well forward and the diastema or "place for the bit" is distinct.

The Epihippus is from the Upper Eocene and is about as large as a fox. In this stage the four fingers and three toes of the Orohippus are still retained, but the central finger and central toe are becoming larger. The once rounded knobs of the molar teeth are now almost completely converted into crests while the third as well as the fourth premolar has become like the molars.

The fourth in the line is the Mesohippus, found in the Lower Miocene White River Formation. It is somewhat smaller than a sheep and stands upon three fingers and three toes, the fifth finger of its Eocene ancestors being reduced to a splint. The side digits are now bearing little weight, while the central ones are much the largest. The crests on the molars are completely formed and three of the premolars have become true molars.

The Miohippus from the Upper Miocene is about as large as a sheep. Like its predecessor in the series, it has three fingers and three toes, a rudiment of the fifth finger still remaining. The

radius and ulna are loosely united, and the tibia and fibula are co-ossified at their distal ends.

The *Protohippus* is found in the Lower Pliocene. It is nearly as large as an ass and represents the first stage where the lateral hoofs are not functional. It stands upon the middle finger and middle toe. The side digits, that is the second and fourth, are still complete but much more slender than in the preceding stage, and they are clear of the ground. The hand still retains tiny nodules of bone at the back of the wrist or so-called knee which are the remains of the first and fifth digits.

In the *Pliohippus* from the Upper Pliocene we have the last stage before reaching the true horse. It is as large as an ass, and in some species the side digits have almost if not completely disappeared.

The last in the evolutionary line is the genus *Equus*, which is first met with in the Upper Pliocene, an animal in all essential details of structure similar to our modern horse.

Briefly reviewing this co-ordinating degeneration and development in its relation to environment, there appears a remarkable example of the power of the animal organism to keep pace with changing surroundings in adapting itself to new requirements. At the beginning of the Age of Mammals, where we find the four-toed *Eohippus*, the North American climate was tropical, and dense forests covered the greater part of the country, the ground was moist, and there was an abundance of tender, green food. The spreading, lateral toes of the little primitive horses were well adapted to the soft turf, their short, tuberculate teeth were sufficient for the tender herbage, and the dense, tropical vegetation offered them protection against their enemies. Horse and climate now evolve together; the continent is steadily rising, the forests become thinned, the land is getting drier, the climate colder, and beasts of prey are becoming more formidable and swifter of foot. The animals must adapt themselves to these changed conditions or become extinct. The ancestors of the horse take the former course, they become larger, the lateral elements of the limbs fall away, while the axial ones develop, giving more speed and a foot

better fitted to the harder turf of the more elevated land. The neck and head are elongating to conform to the increasing height, while the teeth gradually lose their omnivorous characters and become adapted to the tougher grasses of the plains. And so it all goes on through the Tertiary Age. It would appear that the horse develops with the plains until when we reach the beginning of the Quaternary, we find him one of the most specialized of animals in his adaptation to these plains which have become his natural environment.

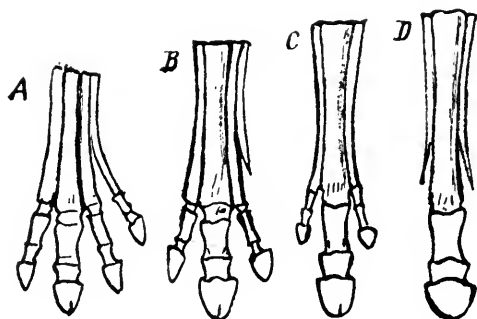
During an expedition sent out by the American Museum of Natural History into Northern Texas in 1899, there was found, among fragments of others, a complete skeleton of one of these Pleistocene horses which is now set up in this museum and represents the last of its race in America. There are no features in this skeleton to distinguish it generically from that of existing species. It is somewhat larger than the zebra, with bulging forehead, short neck, rather long body, and short legs. The lateral digits of its ancestors are gone from both front and hind feet, and there are two rudimentary metacarpal and two rudimentary metatarsal bones. The dentition is 3 incisors, 1 canine, 3 premolars and 3 molars on each side above and below, making 40 teeth in all. The first of the four premolars of an earlier stage having disappeared from the lower jaw, its corresponding tooth above has ceased to be functionally developed, and the remaining premolars have assumed all of the characters of true molars.

It is this horse that before the great ice sheets covered the northern parts of North America and Europe roamed over the open lands of all the continents except Australia and then, during the Glacial Period, became extinct in America and later disappeared from the scene in Europe. Here his trail sinks beneath the geological horizon just as the first scratchings and chippings of man are appearing above it. Why, we do not know. It has been assigned to the ice during the Glacial Period, but they also became extinct in Central and South America, where there was no ice sheet and survived in Europe until the Postglacial. But we might now be in a horseless age indeed had not a sufficient number of

species survived in Asia and Africa to continue the line, and to-day we have the horse, the ass and the zebra—three branches that have come down to us from this prehistoric wild horse. These descendants are still to be found wild in Asia, where we have Przewalsky's Wild Horse, of which little is known, and the Asiatic Wild Ass, while in Northern Africa we have the African Wild Ass, and in the south of that continent there are several species of zebra. The so-called wild horses that until recently roamed the plains of North and South America were feral, that is, they were not truly wild, but descendants of domesticated horses brought here by Europeans and abandoned. That these three branches sprang from a remote common parentage is pretty well proven by similarity in striping. The ass and zebra show the strong back stripe which occasionally crops up in our domestic horses, the circular leg stripes rarely showing in all three. This community of marking strengthens our presumption that, as the Tertiary ancestors of our horses lived in an environment of sunlight and shade, they were striped like the zebra, for this coloring makes less contrast in the sifting sunlight or moonlight of the forest and affords a degree of concealment against prowling carnivora. But at present we have no means of telling at what period this branching occurred that led away from the stripes, though the change in both conformation and color was undoubtedly due to change in environment.

It is inferred that the Old World horses came from America because of their appearance in England, Northern Italy and Northern India in the same geological period in which they are found so abundantly in America, and also from the fact that a distinct connecting link between this horse and his three-toed ancestors, has been found only in America. The fact that the camel appears simultaneously with the horse in the European series, lends support to this conclusion, as there is now no doubt that the camel is an exclusively American bred animal, sharing the Preglacial uplands with the horse, and it is most likely that he migrated to the Old World at about the same time. At the end of the Tertiary Age the continents stood higher above sea-level than

at present, and the plains with their covering of grass had come into existence. At this time there was land connection between North America and Asia, and it is then that our American Wild Horses are supposed to have started on their journey to the Old World. Among these immigrants was the *Equus stenonis* which

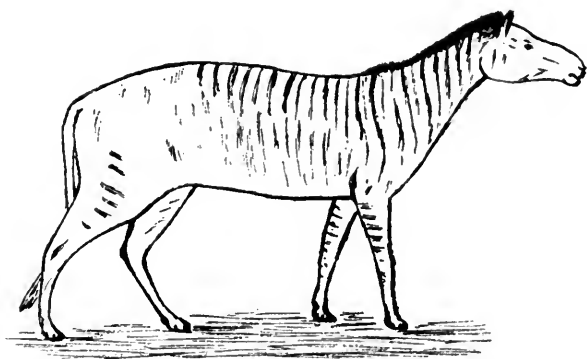


has left its remains in the Pliocene deposits of Britain, France, Switzerland, Italy and North America. Two others, *Equus sivalensis* and *Equus namadicus*, found their way into India, while other species probably settled in Central Asia. It is believed by some paleontologists that *Equus sivalensis* and *Equus namadicus* became extinct, and that *Equus stenonis* gave rise through one branch (*Equus robustus*) to our modern domestic horses (*Equus caballus*) and through another (*Equus ligeris*) to the Burchell group of zebras (*Equus burchelli*).

Though man probably lived in Western Europe before the Ice Age, no trace of him has been found associated with the remains of the Preglacial Wild Horse. Postglacial man came in contact with him in Europe, but they had become extinct in North America before its supposed colonization by the original inhabitants of Asia, though in South America there are indications that they persisted until man's advent. It is in the Rough Stone Age that the remains of horse and man are first found together, and, as they are here associated with chipped stone implements, fire debris and pottery, we conclude that the horse was at that time

hunted and eaten by this cave-dwelling man. The taming and breeding of horses did not take place until thousands of years after man and horse first came together. They were probably first domesticated in Central Asia and North Africa, but are not represented upon Egyptian monuments earlier than the eighteenth dynasty. The first Spanish explorers to the New World found no horses and the Indians knew nothing of them either by contact or tradition, yet when the horse was reintroduced to this country by the white men in the sixteenth century, he thrived and increased, showing how well he was adapted to the native home of his ancestors.

As man's companion in the harness of civilization we find the modern horse almost perfect in his adaptation to his native habitat, yet the rudiments of his conformity to a tropical environment still linger, and it is not quite correct to say that the lateral hoofs have absolutely disappeared. It is thought by some that the chestnuts, or horn-like processes on the fore and hind legs are



the remnants of the first digits; others regard them as the remains of cutaneous glands, which seems less likely, but any doubt that in the ergots or horn-spurs of the fetlocks we have the coalesced second and fourth hoofs, should be cleared away by recorded cases of reversion to the three-hoofed type, in which the ergots are en-

tirely absent. Nature is slow to get rid of these vestiges while they do no harm, but, as the hard ground crust or frozen snow of the northern plains would frequently tear the ergots from their attachments and the consequent bleeding making the wild horses an easier prey to their carnivorous enemies, they should, in the course of adaptive modification, be discarded, and this is exactly what has occurred in the case of the Celtic pony of Iceland which represents in this and in some other respects the highest degree of specialization yet reached by any member of the Horse family. Though we might naturally look upon our modern wild horses, asses and zebras as the nearest to the primitive equine type, this is only true as to colors and conformation. Here we have the retention of those features most suitable to an environment that is but little changed, while the discarding of the useless remnants of primitive organs has made the greatest progress because there has been no interruption; natural selection has not given place to artificial selection, and the line remains unbroken. It is among our domestic types, produced by cross-breeding, that we find tapir-like muzzles and the most prominent ergots and chestnuts; crossing tends to atavism, and the more the bloods are mixed, the more gross become these ancestral vestiges.

In any age in which he may be found, the horse, wild or domestic, will possess some characters of a group which predominated in a former age, united with some characters of a group not yet in existence, and with these characters possess those of a group already existing. Thus he clearly demonstrates a principle applicable to the evolution of all animal life.

Thanks to the energies of Professor Henry F. Osborn and his associates in the work, Dr. W. D. Matthew and Mr. J. W. Gidley, there is now available for study at the American Museum of Natural History at New York City, a series of fossil skeletons illustrating the horse's evolution that in number and completeness is probably unequalled in any other museum in the world. Those who share the popular interest in the ways of nature will be well repaid for a journey to this collection, while to the one having a special interest in the subject, it affords a rare demonstration.

SOME NOTES ON THE "TRYPS."

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Having been out of the United States during the greater part of a year, I have not kept up with what has been done by our home people as regards the study of the different diseases which are the result of the little parasites included in the trypanosomidæ. Abroad, more especially because of the brilliant results with the treatment of that dread and until quite recently incurable disease, "sleeping sickness," a most energetic campaign is going on against all the various forms of trypanosomes that attack man and animals:

As is well known the trypanosomidæ comprise two genera:

- (1) Trypanosoma.
- (2) Trypanoplasma.

The genus trypanosoma is characterized by the possession of a longitudinal undulating membrane, the thickened border of which takes its origin posteriorly from a centrosome and terminates anteriorly in a flagellum. Division usually takes place longitudinally.

The genus trypanoplasma has two flagella, one anterior and one posterior. Both arise from one centrosome; the anterior forms the thickened border of the undulating membrane; the posterior flagellum curves around the posterior end of the parasite, and is then prolonged into a flagellum about equal in length to the anterior one.

The trypanosomidæ occur in fish, amphibia, reptiles, birds and mammals.

Most of these are very incompletely known, and it is only some species in mammals that have been at all closely studied.

Of the trypanoplasmata two only are handled in the laboratory:

- (1) *Trypanoplasma Boreli*.—20M.* long, 3 to 4M. broad.

* M—Micrometre.

Each flagellum 15M. long. It is curved in shape. The undulating membrane on the convexity. The anterior end more pointed than the posterior.

This parasite is found in the blood of the "red eye" (*Leuciscus erythrophthalmus*).

Trypanoplasma Danilewskyi.—15 to 20M. long, less than one broad. Found in the gut of leeches (most probably derived from the blood of some animal).

The following are some of the most familiar of the trypanosomata:

- (1) *T. Lewisi*.
- (2) *T. Brucei*.
- (3) *T. equiperdum*.
- (4) *T. Evansi*.
- (5) *T. equinum*.
- (6) *T. Gambiense*.
- (7) *T. ungandense*.
- (8) *T. Theileri*.
- (9) *T. Transvaaliense*.
- (10) *T. rotatorium* (Gruby).
- (11) *T. Carassi* (Mitraphanow).
- (12) *T. Eberthi* (Kent).
- (13) *T. Corbitis* (Mitraphanow).
- (14) *T. solae* (Laveran).

The *T. Lewisi* is the most commonly studied. It is found in the blood of common sewer rats. A large percentage of sewer rats in England are infected, and most probably rats in this country also harbor this parasite. It is non-pathogenic. Very common in rats of tropical countries. White rats are easily infected. Some think that infection can be transmitted by the rat flea. It is 24M. to 25M. by 1 to 4M.

More slender than the *T. Brucei*. Its undulating membrane less wide.

T. Brucei is the cause of the disease known as nagana, or tsetse fly disease; it is highly pathogenic, and fatal to all mam-

imals. The parasite measures 25M. to 30M. long and 1.5M. to 2.5M. broad.

Nagana is found throughout central Africa. The symptoms of this disease very much resemble surra: Advancing anæmia, and hydræmia with rapid emaciation. In the horse there occurs watery discharge from the eyes and nose, puffy swelling under the belly, sheath of penis; pale mucous membrane, conjunctivitis, keratitis and often total blindness. Like surra, as long as the strength of the patient keeps up the appetite is not destroyed. Morphologically this trypanosome closely resembles that of surra. It is shorter and more compact than the *T. Evansi*, and the flagellum is shorter, the posterior end is blunter, and the protoplasm contain larger and more granules. The mean length of the *T. Brucei* is less and the breadth is greater than *T. Evansi*. The distinction between nagana and surra is best proved by the fact that an animal immunized against nagana is yet susceptible to the surra parasite.

T. Equiperdum.—This is one of the smallest of the trypanosomata, measuring 18 to 26M. by 2M. The disease called dourine is the result of infection by this parasite. It is also called *maladie du coit*, covering disease, etc. Dourine has been called syphilis of the horse; and was always classed as a venereal disease of the horse. Rougeti described it in 1896 and it has been known in Europe for a century or more, but until a comparatively recent date but little was known about it. The horse and ass are the hosts of the *T. Equiperdum*. The horse is most susceptible; it takes a chronic form in the ass. The rabbit is easily infected artificially, the disease lasting from one to four months. In mice 11 to 15 days; but the infection of these animals may be recovered from. Dogs, especially young ones, are very susceptible to artificial infection; they have irregular fever, lose weight, become oedematous, and there is ulceration of the mucous membranes.

This disease is of interest to American veterinarians because it has occurred, and may yet be present in the United States. It is common in Algeria, where it is known as dourine, also occurs in Russia, Hungary, Bohemia and southern Europe. In Africa

along the whole of the coast of the Mediterranean. In Asia, Syria, Asia Minor, Persia and some parts of India. It has been described as occurring in Chili.

Dourine is transmitted from one animal to another during coitus.

It would appear possible for it to be carried by flies and other insects, by going directly from an infected part of an animal to the genital organs of another. Course of the disease slow; usually three well defined periods:

- (1) Changes limited to genital organs.
- (2) Cutaneous and glandular lesions.
- (3) Lesions of the central nervous system.

First.—In the male appears 11 to 12 days after coitus. Œdematous swelling limited to the sheath, sometimes extending to the testicular region, or even to the abdominal walls. The œdema may be cold and painless, or hot and painful, permanent or intermittent, disappearing from one place and appearing at another; there is often a certain amount of infiltration into the penis, the surface of which may show several erosive patches or various eruptions. The urethral mucous membrane may be everted. These appearances vary very much in character and are neither constant nor essential. The inguinal glands are usually swollen and indurated. After three or four weeks the symptoms are somewhat modified and the various swellings become painless and a large collar-like swelling forms where the sheath joins the mucous membrane.

Micturition is painful, and, although sexual desire persists, it is difficult and painful. During this stage general symptoms are not of much significance. Temperature oscillates between 100.5 and 101 F. Appetite continues good, but there is wasting, especially behind. Bowing after exertion and curving of the back may be noticed.

In the female the first symptoms may be noticed five to six days after coitus; the lips of the vulva are swollen; the mucous membrane vivid red. The œdema spreads to the perineum and dependent parts. A clear mucous, which soon becomes abundant,

yellow and sticky, flows from the vulva; the mucous membrane is covered with red patches and is in places thickened and shows various forms of eruptions, which, however, are not characteristic.

There is intense pruritis, which is accompanied by the usual movements of the parts; the animal is apparently continuously in heat. After a time there is a modification of the symptoms; the œdema invades the udder and inside the thighs. At the site of the previous red patches on the mucous membrane, an exfoliation of the epithelium occurs, leaving white cicatrical patches with irregular edges. The general symptoms are the same as in the male.

Second.—Aggravation of the general symptoms, weakness, various innervation troubles, cutaneous quiverings, an almost constant sign is the occurrence of a spasmodic weakness of the posterior limbs, with flexion of the fetlock—an accident first seen during trotting, later during walking and still later when resting. Another symptom of highly diagnostic value is the occurrence of projecting round cutaneous *plaque* of about the diameter of a half-dollar to the size of the palm of the hand; they are not hot nor painful, but are thickenings of the skin and the hair bristles over them. They form on the trunk in different places, especially about the shoulders, flank and croup. The appearance of the *plaques* is irregular, sometimes there is a general outbreak preceded by one or two at intervals varying from one to several days; sometimes they all appear at the same time at all points. They may disappear in a few hours, or last five or six days, leaving only a patch, which is seen as a dry area, while the rest of the skin may be wet with perspiration.

These *plaques* are in some cases œdematous and may transude a little serous fluid, which sticks the hairs together.

These *plaques* are pathognomonic. Lymphatic glands in all parts are engorged, painful and swollen. In some cases there is catarrhal-bronchitis, permanent or intermittent, or a dry cough. Sometimes there is a cutaneous pruritis or there may occur inflammatory swelling of the articular synovial membranes and tendons.

These conditions may occur separately or combined. Weakness and emaciation progress; muscles atrophy; progression is difficult, limbs drag, the animal stumbles.

In stallions erections are painful and short and incomplete; coitus becomes impossible, females may abort. Temperature varies from 101.5 morning, 102.5 evening.

Third.—Paralytic symptoms prevail, appetite nil, mucous membrane pale, œdema of the dependent parts, urine thick, urea increased, salts increased and in some cases albuminuria. Superficial abscesses easily provoked. Paresis, paralysis and later paraplegia and death.

This disease lasts from eight to eighteen months or even two years, although some end fatally in two to three months. Complications may hasten fatal issue. Recovery rare. In the ass the symptoms often pass unnoticed, the only constant symptom being œdema of the penis, until later, when the symptoms are the same as in the horse.

Autopsy.—Usually there are accessory conditions noted; these arise from complications as pneumonia, purulent infection, etc.

General conditions are: Slight thickening indicating the site of the *plaques*. A more or less extensive gelatinous exudate is found under the skin and penetrates between the muscles and around the vessels.

Muscles pale and atrophied. Fat has disappeared, bones fragile, spongy and may be impregnated with gelatinous exudate; marrow is diffuent and reddish brown in color; synovial membranes injected, fluid red and turbid, articular surfaces often soft and eroded.

The *viscera* show no specific lesions. There is fæcal stasis in the colon and rectum; spleen enlarged; kidneys passively congested; serous exudates in the pleura and pericardium; myocardium soft, pale and friable. Lymphatic glands large, soft and on section exude a yellowish fluid and show greyish to red patches, the sites of previous hæmorrhages. In the male the tunica vaginalis incloses a little albuminous fluid with fibrin

shreds, testicles are soft and flabby, often small and their substance replaced with connective tissue.

The mucous membrane of the penis usually shows no trace of previous lesion. In the female the vaginal mucous membrane is often thickened and marked with decolorized patches. The central nervous system shows the chief lesions in the cord; these are often limited to the lumbar and sacral regions. If paralysis has persisted for some time the cord is transformed for a variable length into a reddish brown mush. This is missing if the disease has been rapid. Histologically the cord shows degeneration of the posterior columns, especially marked in the cervical and lumbar regions. The nerve fibres show round-celled infiltration. The muscles show fatty degeneration and atrophy, unequally distributed so that in some places the muscle fibres are degenerated and in others normal. The lesions found in the spinal cord (posterior columns), and also in the nerves of the extremities point to the essential lesions being those of polyneuritis, hence the name has been suggested for the disease: Infectious polyneuritis of the horse.

T. Evansi.—This trypanosoma is the cause of another disease which many veterinarians in the United States may have a chance to observe, although, to the best of my knowledge, surra does not nor ever has existed in this country. On more than one occasion at the University of Liverpool, when conversing with Prof. Owen Williams (the eminent author of several of our most treasured veterinary works), he gravely informed me that he saw many animals that were undoubtedly suffering from surra when he was employed as chief inspecting veterinary officer at the British remount depot near New Orleans, Louisiana, during the late Boer war. When I denied having surra in the States Prof. Williams would reply, "Why of course you have; I saw lots of surra animals when I was there." While in the Philippines I made surra a special study and examined hundreds of animals suffering from it, and am sure would recognize the disease here, but in my opinion there is not a case of surra in the United States. Perhaps some of our learned colleagues can enlighten us on this

subject. The *T. Evansi* measures 20M. to 30M. long and 1M. to 2M. broad. The following are extracts taken from a paper on surra read by me before the Veterinary Medical Society of the University of Liverpool, on the night of December 9th, 1906:

“ Surra.—A fatal disease of solipeds, caused by the presence in the blood of a parasite called *Trypanosoma Evansi*, named after Dr. G. Evans, a member of the Army Veterinary Department, who described it in 1880.

“ Surra was reported by Steel, November, 1885. By Gunn as occurring among some animals in a mountain battery in India, in 1887. This disease has been known for generations on the north-west frontier of India. In 1870 the Third Punjab Cavalry lost 350 horses from a disease which was undoubtedly surra. Geographical distribution: Philippine Islands, India, Burmah, Sumatra, Java, French Indo-China (Southern Europe), etc. Can be conveyed to rabbits, rats, guinea pigs, dogs and some other animals by inoculation. Foregoing animals die from the disease, when the material introduced is taken from animals suffering from surra. Parasite is carried from one animal to another by various agents: Flies, mosquitoes, leeches, birds; any method by which an animal can become inoculated with infected blood will produce the disease. Lingard, who is the author of the most elaborate reports on surra in existence; Burke, Evans and Steel, all veterans in the study of this disease, attribute the cause to swampy grasses. I am still of the opinion that grasses that have been inundated, in stagnant or swampy water, may carry the infection, but in what form I am unable to state. It is well known, and satisfactorily demonstrated, that the parasite undergoes changes and multiplies in the animal body, but whether it has a life cycle outside the body similar to the excorporeal existence of the malarial parasite, or not, has not been proved; most probably it has; if so, there is no reason why part of its life does not take place, either in stagnant water, or in the body of one or more inhabitants of the same. The diptera are certainly accountable for more infections than any other agents.

"Blood suckers of the class Nemocera are found in the following families:

"(1) Culicidæ (mosquitoes).

"(2) Simuliidæ (buffalo gnats).

"Class—Brachycera.

"(1) Tabanidæ (horse-flies, gad-flies).

"Genus, (a) Tabanus.

"(b) Hæmatapota.

"(c) Pangonia.

"(d) Chrysops.

"(e) Hadrus.

"Of this class the tabanus tropicus is the insect that most probably carries the trypanosome of surra most frequently.

"Class—Muscinæ.

"Genus, (a) Stomoxys (*S. calcitans*).

"(b) Hæmatobia.

"(c) Glossina (tsetse fly).

"The name surra has no pathological significance, simply being the Hindoo for rotten. Light-colored animals attract flies more than dark colored. The main facts regarding the pathological phenomena observed in surra were published in the *Veterinary Journal* in 1902 and 1903 by different writers who were able to study the disease as it occurred in the Philippine Islands.

"Atoxyl, which I will mention later on, has cured diseases caused by trypanosomes, and should cure surra."

T. Equinum.—Length 20M. to 25M. by 2M. to 3M. This parasite resembles the *T. Brucei*, but its centrosome is much smaller; in fact, it is so small that its existence has been denied; an animal immunized against the *T. Equinum* is still susceptible to infection of *T. Brucei*.

Trypanosoma Equinum is the cause of the disease called maladia de caderas, which occurs in Central and South America. It is thought that the disease is transmitted from one to another by a biting fly, the *Stomoxys calcitans*. The symptoms resemble those of surra-remittent fever, œdema and wasting, the most characteristic is paralysis of the hind legs, from which the disease takes its

name. It runs a chronic course, two to six months. Sometimes there is present hæmoglobinuria. Mice, rabbits, dogs, etc., are susceptible. Guinea-pigs rarely. Horned cattle are refractory. Incubation period, five to eight days.

T. Gambiense was the first human trypanosome to be described. It was reported in the fall of 1901 by Dr. Dutton, who discovered it in the blood of a European in Gambia. The symptoms were irregular relapsing fever, œdema, congestion of the skin, erythematous patches associated with thickening of the skin, loss of flesh, increased pulse and respirations. The *T. Gambiense* measures 18M. to 25M. long by 2M. wide.

Trypanosoma Ugandense is the most important of the "tryps" from a pathological standpoint, and more research has been carried on in connection with it than of any of the others. It measures 18M. to 26M. long by 2M. to 2.5M. wide. It is found in the cerebro-spinal fluid of patients suffering from that terrible malady called "sleeping sickness," and claims for its victims thousands of the natives of the West coast, Central and East Africa, as well as a goodly percentage of whites who go to those parts. Until quite recently this disease has been thought to be caused by the *Filaria perstans*, while some others were of the opinion that it was the result of lesions of the pituitary body.

The symptoms are: Drooping of the eyelids, puffiness of the face, papular eruptions on the skin, enlargement of the cervical lymphatics, a feeling of cold even when the patient is lying in the tropical sun. It is characterized by somnolence of progressive degree, emaciation and fatal termination.

A great work has been and is at present going on in connection with the cure of this disease. Prof. Koch is at present at work carrying on the treatment of sleeping sickness, with a compound which is called "Atoxyl," first discovered by Dr. Thomas, of the Liverpool School of Tropical Medicine, in 1902; the experiments begun by Dr. Thomas were continued by Dr. Everett Dutton and Dr. Myers, both of whom died from the disease they were experimenting with; they were sent out to Africa from the Tropical School of the University of Liverpool. They succeeded in per-

fecting the treatment and cured many patients, but unfortunately Dr. Dutton died at Kasongo, and Dr. Meyers died on the voyage home, both in 1905. Since that time much has been done in the treatment of sleeping sickness. Last winter it was reported that Prof. Koch had discovered a cure for sleeping sickness; this was about December 3, 1906; it was stated that Prof. Koch did not make known the discovery until he had cured thousands of cases, and had had them under observation three months after cure; it also stated that he had made the discovery of the curing compound only after many years of work in that line in dangerous climates, and had almost given up the cause as hopeless. This statement was promptly corrected by Dr. Koch in his report and full credit given to the Liverpool men. At the present time Prof. Koch is carrying on his great work in the heart of Africa. On one of the Sesse islands in Lake Victoria Nyanza are some buildings which the British Government has placed at the disposal of Prof. Koch; it is there that the afflicted natives flock to receive the cure.

This spring the University of Liverpool has sent out another party on an expedition against this and other dangerous tropical diseases. It is to be hoped that they will be entirely successful in their undertaking and will return safely.

Because of the very intimate relation that exists between sleeping sickness and surra, and other diseases caused by the trypanosomidæ it is thought by most investigators of these diseases that Atoxyl (which is a compound made up of a prepared serum and arsenic) ought to cure surra and its allied diseases. It was because of the great hopes, and confidence displayed in Atoxyl by the scientists who were among my teachers at the Liverpool University this year, that I applied to the War Department to be allowed to go to the place where Prof. Koch is at work, but I regret to say that the application was refused. Later on perhaps the method of making Atoxyl and the technique of its administration will be made known, and it may be that we will then be able to handle surra, etc., as easily as any other amenable disease. In a report from Dr. Emile van Campenhout, who has been curing European patients suffering from sleeping sickness, at the Water-

mael Hospital, Brussels, the doctor states that he has cured three patients in the last stage of the disease to whom death otherwise would have been a matter of weeks. The treatment was sulphate of strychnine internally, with injections of the arsenic compound Atoxyl for four months at a time. The dose injected was gradually increased from 25 centigrams at the beginning of the treatment up to 80 centigrams by the end of a month, when the trypanosomes were found to have disappeared from the blood. The dose was then gradually reduced to 25 centigrams. There were no relapses. Dr. van Campenhout has dealt with thousands of cases of natives in the early stages of the disease and states that in Atoxyl there has been found as powerful a specific against sleeping sickness as quinine is against malaria. (It has been reported that Dr. Koch made a similar statement.)

Among exceptionally interesting cases mentioned by the doctor is that of a young man of keen intelligence so stricken with the deadly disease that at mealtime he would fall asleep between the grasping of a cup and raising it to his lips. He is now completely restored to health.

T. Theileri.—Length 36M. to 65M., width 2M. to 4M. Found in the blood of cattle in the Transvaal, suffering from a disease known as "gal ziekte"—gall sickness. Transmitted by a biting fly (*Hippobosca rufipes*).

T. Transvaliense.—Length 18M. to 50M., breadth 4M. to 6M. The undulating membrane is but little developed. Found in the blood of oxen.

T. Rotatorium.—40M. to 80M. long, 4M. to 6M. broad. Found in the blood of frogs (*Rana esculenta* and *Rana temporaria*). Flagellum 10M. to 12M. long. Surface of body striated longitudinally.

T. Carassius.—Besides the forms with the undulating membrane and flagellum, disk-like forms are found. In the blood of the carp (*Carassius vulgaris*) and the tench (*Tinca vulgaris*).

T. Eberthi.—Found in the gut of the chicken, duck and goose. Not a blood parasite.

T. Corbitis.—Length 30M. to 40M., breadth 1M. to 2M. Flagellum 10M. to 15M. It is long and thin. Found in the blood of the mud-fish (*Corbitis fossilis*).

T. Soleae.—Found in the blood of the sole.

Aino is the name for a disease in Somaliland, affecting camels, horses, asses and mules. It is caused by a trypanosome, and is very fatal to camels.

Trypanosomes are easily detected in fresh blood with a one-sixth or one-seventh lens. They are actively motile, and may be seen displacing the red cells by their motions. As they come to rest the undulating membrane and flagellum are visible. In stained specimens (Romanosky) an oval nucleus lies about the middle of its length, and near the blunt posterior end a small stained particle is clearly visible, the centrosome. From this in most species the flagellum starts, and can be seen as a distinct wavy thick red line extending the whole length of the organism, and continued beyond as the long (anterior) free flagellum. The portion (unstained) between this external wavy margin and the blue stained body of the organism is the undulating membrane.

Multiplication of trypanosomata takes place usually by longitudinal division. The nucleus and centrosome divide into two or more parts.

The trypanosoma becomes more or less quadrangular in form and from each centrosome a new flagellum is seen starting.

Multiplication by other modes takes place: Conjugation, transverse division, formation of amœboid forms, etc.

Sexual differentiation is suspected; it is certain that in the organs of a case of trypanosoma infection numerous strange forms can be seen, but there is nothing definitely known about them.

If, as is sometimes the case, the parasites are very scanty in the blood of an infected animal, they can often be found in the œdematous fluid so constantly present in trypanosomiasis. It may be necessary in some instances to centrifuge the blood. Agglutination readily occurs by following the ordinary technique. The most delicate test is a sub-inoculation into a highly susceptible

animal; this is best done into the peritoneum, although subcutaneously is almost as certain.

Auto-agglutination occurs and is a sign that the infection is dying out. Sometimes the mass of parasites become so large as to be seen with the naked eye; this is especially the case if the blood examined is cooled; the individual trypanosomes, however, do not lose their motility.

Through the kindness of Mr. Robert Newstead, F. Z. S., Entomologist at the University of Liverpool, I am in possession of some tsetse flies, both male and female. Some of the readers of the AMERICAN VETERINARY REVIEW may be interested in a short description of them:

Tsetse fly.—Order, diptera; family, muscinæ; genus, glossina.

Characteristics: Narrow bodied, elongated fly, dull gray or reddish brown color, 7 to 12 m.m. long. Recognized during life by wings being closed flat one over the other, like a pair of scissors, and projecting over the abdomen behind. Probosis ensheathed in palpi, equal in length to thorax (minus scutellum). Base of probosis expanded into an onion-shaped bulb. Wings characteristic; there is a sharp bend in the fourth longitudinal vein before it reaches the anterior transverse vein. Abdomen has generally well marked transverse bands, brown in color; they are interrupted in the middle. Sex easily distinguished by the male genitalia being oval and tumid, with a vulviform median groove (anus), running from the anterior margin to the middle. Life history incomplete. Unlike most of the diptera, this fly does not lay eggs; it is puparious; the female exudes a fully developed larva, which matures in the body of the parent. Does not cast off the old larval skin, the only change being the pupa increases in size, the larva and pupa are similar. It takes several days for the larvæ to become pupa, the period of incubation is five to six weeks. The pupa is 6 m.m. in length and 3 m.m. broad; it consists of six segments.

Tsetse flies inhabit damp low-lying districts; their flight is confined to small areas; reproduction of the species can be carried

on without the medium of blood; heavy rains may kill them. Most numerous during hot sultry weather, just before rains. More plentiful during the winter season, April to September. Flies most active during the heat of the day; they rest early morning and evening. The flight of the tsetse fly is very direct; it pounces upon its prey and fills up in 20 to 30 seconds after biting, and is infective for 48 hours after receiving infected blood. There are several species, but the *G. morsitans* and *G. palpalis* are the two that are commonly spoken of as tsetse flies. The first mentioned is one of the smaller, measuring about 7 m.m., very narrow head, eyes converging towards the vertex, abdominal bands not as deep as most and paler in color; it is the intermediate host of the *Trypanosoma Brucci*. The latter is the darkest of all the species, the third joint of the antenna dark brown to black. It is the intermediate host of the *T. Ungandense*, and the *T. Gambiense*.

MAY 29, 1907.

THE REVIEW IN NEWFOUNDLAND.—Dr. J. Fergus Donnelly, St. John's, N. F., writes, under date of June 20: "I have taken the REVIEW since last November and would not be without it at any cost, as I consider it worth its weight in gold."

SUIT AGAINST A VETERINARIAN.—A London stockbroker named Simmons, in 1904, employed Charles Sheather, M. R. C. V. S.; a well-known London practitioner, to examine a black cob mare, 14.3 hands high, which the former wished to purchase for a saddler. The veterinarian made an examination, and with the exception of an enlargement of the tendons of the off fore leg passed her as sound. The purchase price was \$300, and she was delivered to her new owner. In a short time Simmons notified Sheather that the mare had spavins, that he intended to sell her at auction and sue the veterinarian for the difference between what he gave and what she would fetch at auction. Sheather purchased the mare at the sale for less than \$100 and used her continuously in his practice without any lameness manifesting itself. She was then slaughtered, and at the trial recently the hock bones were exhibited, showing perfect freedom from disease and Sheather got the verdict.

INDIGESTION IN THE HORSE.

By D. O. KNISELY, D. V. S., TOPEKA, KANSAS.

Presented to the Meeting of the Iowa Veterinary Association, January 28, 1907.

It is with pleasure that I am here before this association and able to take part in this program with you. I feel sure there is in these meetings more real knowledge gained than in most any other way we can recommend. Here with all who attend these meetings we are sure they have all gone through with hard study trying to gain a knowledge that would fit them for a higher place than the average wage-earner and to further our usefulness to the world at large, and in this branch of work the veterinarians have distinguished themselves among the best. There is no other profession that has gone more to the front and made itself more recognized in the same length of time than our profession.

But we all realize how much more there is to be brought out and to determine just what should be done to relieve the suffering brute. There are many instances in all of our practice that we feel sure there should be some way in which to relieve our patient. In many instances this is the case, but in too many it is not the case.

In my paper I will take up the subject of "Indigestion in the Horse," one that has been studied by every veterinarian in our country (or at least should be). Many good articles have been printed in our REVIEW, for which all of us should thank the publishers, as well as the writers. In the January number we have a couple of good articles, one by Dr. R. P. Lyman, and one by Dr. J. F. DeVine. Both of these are good articles, and have taken time to note the changes brought on in these intestinal disorders, and while they are very instructive and should be closely observed by any practitioner, I think all of us must agree on one thing, the mode of making a positive diagnosis in these cases, a thing most essential to us, before we will be able to come to a precise mode of treating them. Now, while so many good papers have been written on this line of trouble, I am sure there is room

for all of us to enlarge on them, and, further, will say it will be some time before all the intestinal troubles of the horse can be distinguished or separated one from the other, and I for one shall not try in this paper to differentiate these troubles. To do so would require too much time and a much more theoretical brain than I have. These are nice subjects to sit in the office and tell the differences of the lesion and the amount of structure involved, but to go out and get your subject and hunt them out is altogether another proposition.

I find that many cases have great variations of symptoms. I have seen many horses with stomach trouble that would sit on their haunches, while others would show no symptoms like them at all. Again I have noted symptoms in volvulus and intussusception where they would sit on their haunches, and again others not do so at all, but show great uneasiness all the time with apparently no intermission of pain for hours. So that to tell how you may be able to differentiate, I am unable to do so, at least this has been my experience with intestinal troubles of the horse, and when reading articles in the *AMERICAN VETERINARY REVIEW* I always think there are others who have trouble as well as myself.

I will frankly say that intestinal troubles of the horse have caused me more worry than any other thing in my work, not that I am better versed in all others, by any means, than this, but from the fact that cases that apparently did not have any bad symptoms on arrival would follow along and in from six to twelve hours die for me in spite of all treatment. Again, cases that came into the hospital that looked as though they could not possibly live an hour would after five or six hours be apparently as good as ever.

Now, these are the things that necessarily must make one wonder how it is that cases can have such a variation, one real bad and alive, and another apparently not much sick, and yet die. This is surely enough to bring the idea into one's head that something has gone radically wrong with one and something miraculous occurred with the other.

Again, we have had patients that lived but a short time after seeing them, and on post-mortem examination we are surprised to find the intestinal tract apparently in good condition, and not a thing, apparently, wrong that should have necessarily destroyed our patient. But this has often been the case, and will be just as long as strictly medicinal treatment is followed in these cases.

While I do not wish to imply the fact that medicine should be discontinued altogether, I do claim that there is entirely too much used, and in many cases mechanical treatment alone should be brought into our cases, and should you see the results obtained by mechanical treatment you then would readily concede that such is the case.

How many of you have been called to see a horse that has been sick from three to six hours. The owner and all neighbors have advised what to do and all kinds of decoctions have been given, but the sufferer has not been relieved, and then you are called. Of course, this is entirely wrong from our side of the case, but it is done, the work is over, and after the administration of a dose or two of medicine the patient goes under; he is over his troubles; no more decoctions needed in his case. But are your troubles over? Not yet. Nine chances to one the fellow will say that after the first dose you gave him he got worse and in a short time died from your treatment. And that is not all your troubles. He will take pains in many instances to advertise that he had So-and-So, and that he really doesn't think he knows a case of colic from kidney trouble. These are the things that hurt us in a way, for we all know from experience that with the laity 49 out of 50 horses are bothered with their water.

Now there are a great many drawbacks with our work, especially in these cases. The patient has been exhausted by thrashing himself around, and usually the enormous amount of stuff not needed that has been poured down his throat has helped to weaken him instead of building him up. At least this is the case in many instances in my practice. And to try to explain things to many of them is only wasting time, for when you are done they will say "Yes," and tell their neighbor how you tried to squeeze

out of it. Now these are a few of the things in my career that have made me lose a good deal of confidence in myself and a good deal more in the way of medicinal treatment in indigestion in the horse.

Now, let us go back just a little and I will try and show why I have lost out on medicine. You have a patient brought to you, or you are called to one, and, as is often the case, the owner has tried everything and you are supposed on arrival to jump down and in 15 or 20 minutes make some radical change in his appearance. Now, the general run of these patients are treated with some form of a physic, something to allay or liquify the supposed gases that are contained in the stomach and intestines. It is usually followed by stimulants of some form—warm water enema and the use of the trocar in either the cæcum or colon. In this manner they are carried along to either a recovery or death. At best one of these cases will hang on from ten to thirty-six hours. There is no stipulated time in them and the veterinarian attending has the pleasure of sitting around in some stall or yard during the better part of the night with the owner telling him how troublesome some of these cases are to control, and if he is able to do that and convince him he is right, all is well and good, but let me say right now, if the patient dies there is a different talk made in that community, and to convince the other party is altogether a different thing.

Now, while I think these cases should always be considered on the safe side to the veterinarian so as not to leave an opening for the non-professional to pick upon him, and all that, I am sure there are a good many graduates who have neglected the opportunity to hold autopsies in such cases and note the actual conditions of the intestinal tract from the stomach on.

The facts are in many instances that the practitioner is led to believe that the main trouble is in the cæcum and colon to start with, for these are the intestines that become greatly distended with gas, and in many instances so much so that the animal is greatly distressed in every way. And from this distention the diagnosis is made, either favorable or unfavorable. For years

the trocar and canula have been called into use in these cases, and there is no doubt but the life of many a good horse has been saved by them, but we have some chance to take by using it, which is, we may have an abscess follow, and in some instances these are very slow in healing. But even with that chance I should not hesitate where I thought my patient would smother down.

Now, I would like to say something that I am sure will not strike everybody as I think, but be that as it will, I really think that in seven out of every ten cases of colic the original seat of trouble is in the stomach, and there alone. The condition I shall speak of as I go along I think will bear out this idea.

To go back and take up a case. I have found that in these cases the stomach contained from 10 to 30 pints of fluid, not gas, but a sloppy, sour mixture, ranging in color almost like that of blood to the contents of an old swill barrel that has soured three or four days. There is in all these cases labored breathing, even though the colon shows no distention by gas, but my theory is this: The soured feed had not yet had time to pass through the small intestines into the colon, for in time they always bloat up or show distention, but the gas producer is the stomach, the stomach being so constructed that it is practically out of the question to come forward, but will pass out through the duodenal opening into the small intestines and from there work back and contaminate the fæcal matter of the cæcum and colon, and then the gas is set up at that point.

Now, then, after knowing that the stomach contains this sour fluid and feed, it doesn't look reasonable to me to throw any kind of medicine into this stomach, or that you could expect to get very much action from it, nor do I believe it would to others could they see the condition that really exists in most of these cases. For, as I have said, it is not a gaseous nature we have to do with, but entirely a fluid condition. Consequently we have not a gas to be liquified, as is thought by many, and medicine could hardly form this fluid into a solid substance, so what action would you expect?

The treatment of these cases that has been followed by Dr. Pritchard and myself has been very satisfactory for the past six years, and is continued in these cases at the present time. It consists principally in the use of the stomach tube, a tube gotten up by myself and Stallsmith. This tube is invariably used in these cases as soon as we get them. To better explain our method I will cite just one case in full that I consider remarkable as to treatment and its results:

Brown mare, driven eleven miles into town, was noticed sick on arrival, which was at 10 A. M. The owner and three friends worked with her, giving at intervals opium, ginger, nitre, sodium hypophosphite, oil and syrup and a small dose of aloes. Warm water enema had been given repeatedly and walking exercise. This was followed up until 4 P. M., when she got very uneasy and refused to walk any more. At this time I was called to see her, the owner stating he thought it was too late, but had done all he could outside of calling a veterinarian. On looking the mare over I told the owner that if he could get the mare to the hospital, six blocks away, I would do what I could. She was gotten up and started at once. On arrival she was weaving from side to side and I thought would surely fall, but managed to retain a standing position. The stomach tube was passed at once, and as nearly as I could tell about a pail of fluid returned. The mare broke out in great drops of sweat and was greatly distressed in every way. The tube was pulled out and the mare led into the open air. She was left there just three-quarters of an hour, when she was led back again and the tube passed the second time. This time she was over the worst of her breathing and plenty of time was taken to clean the stomach. How much actual fluid was drawn off I am unable to state, as it was not caught but ran into the sewer on the wash rack. But after the tube was taken out and the mare placed into a box stall the solid feed that had returned with the fluid was shoveled up into an ordinary watering pail, filling it full. Two hours later the mare was standing up, not having been given a dose of any kind of medicine more

than the owner and his friends had given her. The next morning she was in shape to go home and did the eleven miles.

Now, this is only one of a good many cases that have never gotten a drop of any kind of medicine. When any is given it is usually oil and syrup or oil and eucalyptolin or eucalyptolin itself. A favorite of mine is small doses of tincture of nuxvomica repeated every 20 or 30 minutes. We claim that by the use of the tube we remove the cause of our trouble and consequently are done with that.

There are a good many instances where the tube must be used the second time and even the third. The reason for this is that when the stomach has been emptied it leaves a space for the fluids contained in the small intestines to pass back and into the stomach. In this case it is refilled and causes the same distress as before. But through this action of the intestines the distension of the cæcum and colon are relieved. In most all instances it works back through the small intestines and is drawn off by the use of the tube. In this way a great many cases that necessarily would have had to be tapped are passed on and the chances of an abscess are done away with.

I should also like to call your attention to the time usually required to stay with one of these patients. I stated that in many instances with medicinal treatment it required from ten to thirty-six hours. It is a remarkable case that requires more than one to six or seven hours. As a rule any going longer than that will die and on post-mortem examination you will be able to see why relief was not given. There has not been a case at our hospital in twelve months that was stayed with during the whole night that lived. So it not only cuts the expense of medicinal treatment to a minimum, but the long hours of staying with your patient is done away with.

In summing up my paper, I would like to give you the number of cases of so-called colic cared for by myself and partner in the twelve months of 1906. During this twelve months we had 310 cases of so-called colic. Out of these 310 cases just an even 100 had the tube passed on them. The tube was passed 150 times

—some two, three and one five times. Out of this number we had 15 deaths. The post-mortem lesions in every case showed some form of rupture, intussusception, fatty tumors or twists or complete knots.

Out of this number the trocar was used on six cases and invariably from one to nine times. The one tapped one time made a nice recovery; also a nice abscess followed. Out of six tapped four died; these cases were intussusception in every instance at the ileo-cæcal valve.

I have given this list to show the actual times the tube was used and the results that followed. In no instance was there a death without some lesion that to me was incurable, nor has there been in the past three years.

POINTS IN THE DISCUSSION.

Knisely says most cases of colic are in average weight horses and he has seen only one in a mule, generally in hot weather and nearly all in afternoon and evening, very few in the morning. He insists that the ilio-cæcal valve will allow gas and fluids to return. He never passed stomach tube but twice without getting solids, liquids or gas. Injects some water into tube so as to get vacuum.

Dr. S. Stewart spoke of the immense size of stomach in some of these cases. Suggested formalin enough to saturate—capsicum in capsule. This absorbs gas and causes stomach to contract and force gas into intestines.

Dr. Knisely demonstrated the use of the tube at the clinic on the following day.

A WESTERN VETERINARIAN was recently victimized by an alleged news agency of Macon, Ga., which accepted four dollars of his money for a year's subscription to the *Veterinary Journal* (London) and the *Journal of Comparative Medicine and Veterinary Archives* (Philadelphia). As the latter periodical ceased publication in May, 1903, it would hardly be expected that a well-informed American veterinarian would fall to such a proposition in 1907; but to reassure his victim, the agent stated that Dr. Hoskins' journal had resumed publication that week.

ABDOMINAL OPERATIONS ON THE DOG.

By A. L. WOOD, V. S., HAMPTON, IOWA.

Presented to Meeting of Iowa Veterinary Association, January 28-30, 1907.

This line of work was not chosen as a subject with the object of enlightening veterinarians of this Association. It is only hoped that something may be said which will get us to thinking and doing along this line, should an opportunity present itself.

It is pleasant to break from the usual routine of work which the different seasons bring to us and wander through the different by-ways of nature, plucking a flower here and there, that we may compare them with some older and more common variety.

We, two M. D. brothers and myself, have done a little of this wandering, though did not venture far from the beaten paths of the sciences. During the past six months in the early mornings and when spare time permitted we have performed some thirty operations on the dog, not to see how many, but rather how well we could accomplish them.

All of our work was devoted to the different means of intestinal anastomosis, and the use of a new anæsthetic, scopolamine and morphine.

The dogs received no preparatory treatment for the reason that this class of case usually is one of emergency. Scopolamine, 1:100, gr.j, combined with morphine gr.ss., is injected hypodermically just prior to preparation before operation. By the time instruments, etc., are sterilized and the seat of operation made ready another such dose is given and with a few whiffs from the ether bottle our patient is ready.

If hypodermic injection is given one and a half to two hours before operation usually no general anæsthetic is required. The hypodermic injection produces emesis when stomach is not empty, but no other unpleasant symptoms were noted. The anæsthetic effect of scopolamine and morphine last from 1½ to 2½ hours, followed by no disagreeable symptoms apparently.

The methods used in performing the end-to-end anastomosis were by the use of the Murphy button, the Lembert suture and the Connell method. The average length of time consumed in doing the end-to-end anastomosis by the use of the Murphy button was thirty minutes, the button being passed in one case as early as the fifth day and the longest time the button was retained being seven days.

The length of time required in performing an end-to-end anastomosis by the Connell method is its only disadvantage, it taking about three-quarters of an hour, but by practice on the Connell method this objectionable feature could be largely overcome and the time limit reduced nearly, if not quite, as low as that by the Murphy button. The advantages of the Connell method over that by the use of the Murphy button are: First, less danger of obstruction to the bowel at the point of anastomosis; second, better approximation of the peritoneal surface; and, third, no danger of obstruction to the bowel or other unpleasant symptoms subsequent to the operation by retention of the button, which sometimes occurs in the use of the Murphy button. However, the anastomosis by the use of the Murphy button is by far the preferable operation in the hands of inexperienced operators.

A few points to be remembered in doing intestinal work is, first, to use an uncutting or round needle with silk in all work on the gut itself and the use of catgut or other absorbable material in the mesentery, good approximation of the peritoneal surfaces of the gut; this oversight on our part being the cause of the only fatality we had in our series.

EHRET'S BREWERY, New York, has placed a contract with the Fiss, Doerr & Carroll Horse Company for 150 draught horses, to be delivered during the coming year. They are to be the finest animals of the Percheron breed that can be found, and the price for the lot is to be \$75,000, just \$500 apiece. Mr. Carroll states that the individuals necessary to fill the order are about as scarce as first-class show horses among the lighter breeds, or about one in every 500 Percherons raised.

MODERN VETERINARY METHODS:

BY WALTER J. TAYLOR, D. V. M., ITHACA, N. Y.

IMMUNITY.

EXPLANATION OF ACQUIRED IMMUNITY.

A number of ingenious explanations have been offered for acquired immunity. The only ones that have withstood the criticisms of their objectors are those of Metchnikoff, representing the cellular theory and of Ehrlich, representing the humoral theory. The results from the different lines of investigation indicate that the factors involved in securing immunity against infectious diseases are multiple in number and varied in character. As pointed out by Meltzer it is difficult to explain immunity as being due to any one or even a few anti-bacterial properties of the animal body. In the struggle against bacteria the defense of the body is carried on by the united action of each and every resisting influence. However, a number of theories have been proposed.

1. *The Exhaustion Theory.*—This theory was suggested in 1880 by Pasteur, who thought that the microorganisms growing in the body used up some substance essential to their further existence and died out, leaving the body unsuited for future occupation. This theory, however, could not apply to passive immunity produced by the injection of anti-toxin.

Such a theory, likewise, could not account for the facts seen in Natural Immunity, in which no previous growth of the bacteria could be supposed to occur. This is illustrated in the case of the Algerian race of sheep. These animals are not susceptible to inoculation with anthrax bacteria sufficient to kill ordinary sheep, but will succumb to very large doses of those organisms. It, therefore, is very evident that if in the first case the resistance was due to the absence of nutrition for the organisms the much larger number of organisms in the second case could not possibly find enough to live upon.

2. *The Retention Theory.*—In view of such objections as these, Chauveau brought forward his Retention Theory to explain the phenomenon seen. This theory is based on the fact that the bacteria elaborate some metabolic product that inhibits their future development and the future invasion of the tissues by the same species. This theory is illustrated with the

facts shown in the cultivation of bacteria in artificial media. The bacteria often die apparently from the accumulation of metabolic products long before the nutriment is exhausted. To explain such cases as those of the Algerian sheep by this theory, it would be necessary to suppose the existence of a fixed amount of the opposing substance that would be more than neutralized by the excessive doses of the anthrax bacterium, after which infection occurred. This theory does not explain the facts concerned in Natural Immunity. Pasteur has shown that chickens which are not normally susceptible to the anthrax organism at their normal temperature, become so when that temperature is lowered. His comment upon this fact in regard to the Retention Theory was that it could not be supposed that a preventive substance existed that would disappear under the influence of cold.

3. *The Phagocytosis Theory*—Metchcnikoff has supposed that acquired immunity is brought about by the action of the phagocytes upon the invading organisms. He has shown that in cases of infection with the *Vibrio Metchnikovi*, the phagocytes of unprotected animals do not take up the bacteria, but that in vaccinated animals they do. It appears from all the work that has been done on this subject that the phagocytes are active in proportion to the degree of immunity possessed by the individual. It has not been demonstrated, however, whether they are active because the animal is immune and the bacteria harmless to it, or whether the animal is immune because the phagocytes are destructive to the bacteria.

4. *The Humoral Theory*.—This theory is based on the observation of Buchner, Nutall and others that the blood serum has the power of destroying a certain number of bacteria when they are introduced into it. Nutall showed in addition to this that the bacteriolytic power ceased if the blood was heated to 55° C. It is found, however, that the bacteriolytic serums occur only in cases where there is a high degree of forced immunity, their activity being in proportion to the degree of immunity obtained. An explanation for the action of these serums upon bacteria is given by Ehrlich in his *lateral chain theory*.

EHRlich's SIDE-CHAIN THEORY.

I. *Toxic Immunity*.—According to Ehrlich, in every living cell there must exist an active central body and a number of other chemical groups or side-chains. These groups have the greater variety of function, especially those of nutrition and assimilation. This theory teaches that immunity depends upon the presence or

absence of certain substances which he calls receptors or lateral chains which certain of the cells possess. These receptors are concerned in the normal nutrition of the cells and have affinities for various complex albuminous substances. Among these substances are the molecules of the toxin produced by certain bacteria and possibly other poisons.

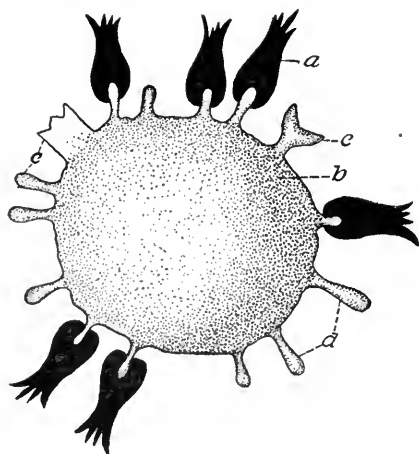


Fig. 1. A cell with different kinds of receptors; *b*, cell; *c* *c* and *d*, different kinds of receptors; *a*, bodies having one haptophore or combining group of atoms. After Ehrlich.

Every toxin has affinities described as haptophorous and toxophorous, that is, every molecule of the toxin (Fig. 1, *a*) is composed of two different groups of atoms, the one the toxophore or poisonous group, the other the haptophore or combining group. The haptophorous group of the toxin combines or unites with the receptors of those cells for which they have a special affinity and the toxophore part of the molecule is enabled to pass through the haptophore group into the cell upon which it acts. In some cases the cells are destroyed and in others, additional receptors seem to be produced because of the stimulation. This is illustrated in Fig. 1. Here is shown a cell to which is attached, through the medium of its receptors, certain toxin molecules for which this cell has an affinity.

If, then, we were to suppose that these toxin molecules were those elaborated by the tetanus organism and the cell one of the cells of the body possessing an affinity for that toxin, the poison-

ous group of this toxin molecule having passed into the cell has stimulated it to throw out additional receptors which in turn have locked up the additional toxin molecules elaborated by the organism of tetanus, the cell having been able to withstand such a number of toxin molecules, is not destroyed and all the toxin being neutralized, the disease is overcome.

In some cases the action of the toxin molecules upon the cell stimulate the cells to throw off free receptors, which may pass out into the blood serum where they act as immune bodies to lock up or neutralize the toxin. When there are more free receptors thrown off than there are toxin molecules present they remain as free receptors in the blood serum. These free receptors are what constitute the active principle of anti-toxin. This is the phenomenon which takes place in the production of anti-toxin, such as diphtheria and tetanus, in the bodies of animals which are utilized for that purpose. This is illustrated in the following figure:

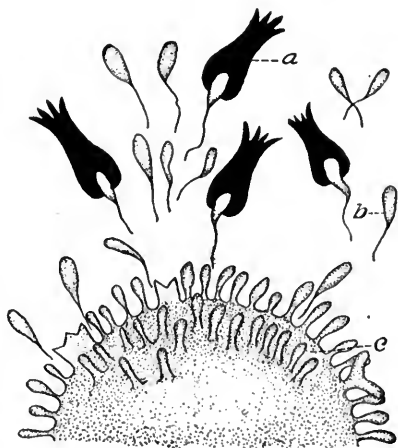


Fig. 2. A cell showing the separation of the receptors or antitoxin and the combination of toxin with free antitoxin; *c*, cell; *b*, free receptors; *a*, toxin. After Ehrlich.

In the use of anti-toxin as a preventive agent, the stimulation of the cell to the production of free receptors is a secondary consideration. The anti-toxin introduced contains the free receptors. Thus in case a dose of tetanus anti-toxin is given before or after an operation to overcome a possible infection with the tetanus organism, these free receptors are already present in the blood of the animal treated. The cells of the animal thus immunized are

therefore not called upon to produce additional receptors or free anti-toxin, that is, the free receptors or anti-toxin introduced lock up or neutralize the toxin produced by the infecting organism.

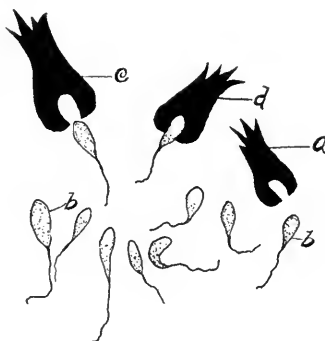


Fig. 3. Drawing to illustrate the neutralization of toxin by free receptors in the form of antitoxin; a, toxin; b, free receptor; c and d show the process of neutralization.

Figure 3 illustrates this point. Here we see these free receptors which have been injected in the form of anti-toxin into the animal tissues becoming attached to certain toxin molecules. These free receptors or anti-toxin are able to lock up or neutralize a certain number of toxin molecules. If, however, more toxin molecules are produced than there has been anti-toxin injected, certain cells of the animal will engage these additional toxin molecules and be stimulated to throw off more receptors as illustrated in Fig. 1.

In the production of *Bacterial Immunity* certain other phenomena take place. This subject will be treated, however, in a subsequent article.

(To be continued.)

A GENTLEMAN is about to establish an extensive milk goat farm on Long Island to produce milk for the New York market. The comparative freedom of these animals from tuberculosis is the cause of his project.

"THE REVIEW IS SO GOOD I can't help telling the boys about it, and then they want me to order it for them."—(Chas. A. McKim, *State Veterinarian of Nebraska*.) Dr. McKim accompanied the above kind expression by several subscriptions for Vol. XXXI.

REPORTS OF CASES.

"Careful observation makes a skillful practitioner, but his skill dies with him. By recording his observations, he adds to the knowledge of his profession, and assists by his facts in building up the solid edifice of pathological science."

CARCINOMA OF THE STOMACH—IF NOT, WHAT?*

By G. W. CLIFFE, V. S., Upper Sandusky, Ohio.

On a certain afternoon in the middle of August a gentleman brought to my hospital the subject in question, a bay horse, 15.3, seven years old, of the trotting type and breeding. I was asked to examine this horse and place him under treatment.

The history of this case in brief, as related by the owner, is as follows: That this stallion had received average care, had been used in the stud during the season and as a road horse the balance of the time, that the present owner had owned him since a colt and that he had never known him to have been injured or sick at any time in his past life up to the latter part of June, when he began to lose his appetite and fall off in flesh in spite of generous feeding. He had given him remedies prescribed for indigestion without satisfactory results; that the latter part of July he began having slight spasmodic attacks of colic almost daily. As days passed the colic symptoms became more aggravated in connection with frequent attempts at vomition and the horse constantly losing flesh. After each attack he would lie stretched out for about an hour apparently exhausted and at times unable to rise. He also stated that these attacks were sure to follow the introduction of fluid into the œsophagus.

Symptoms.—Pulse 60 and weak, temperature 100.2-5, all visible mucous membranes pale and slightly yellow, extremities warm, respiration increased, breath fetid, appetite gone and any attempt to take fluids was followed by extreme convulsive retching in attempting vomition, which would last ten to fifteen minutes, when he would either fall or throw himself upon the ground, when the paroxysms would continue in connection with such excruciating colic symptoms as groaning, rolling, kicking and striking, the latter symptoms continuing for some minutes after the former had subsided, after which he would lie stretched out limp and apparently exhausted for an hour or more. Upon stag-

*Presented to Meeting of Ohio State V. M. Association, January, 1907.

gering to his feet he looked a picture of abject emaciation. The faeces very small, light colored, fetid and covered with mucous.

After the examination the owner asked me if I had concluded what the trouble really was and if I thought that I could do anything for him. I said to him that I had made up my mind there was just one thing that should be done—which I believed to be an act of humanity—and that was to have this horse destroyed; that as far as I was concerned I could offer no relief, not being satisfied in my own mind as to the true nature of his difficulty. He insisted that I keep this horse until the following day, when he would call for him. On the following day I gave this horse a hypodermic of six grains of morphine, waited thirty minutes, offered him some water, which he attempted to drink, but was immediately followed by symptoms as before described. Later in the day the owner called for the horse, received no satisfaction and took the horse home.

On the following day (Monday) this horse was placed under treatment by another veterinarian, who continued to treat him for about two weeks, when the owner was advised it would be an act of charity to destroy him.

A day was set for the destruction of this horse and I was notified to be present. Being interested I was on hand at the appointed time. The only change that I could notice in the animal was that he had still reduced somewhat in flesh and that the symptoms before described were more aggravated.

The animal was cast and secured and the carotid severed. It was noticed as the blood flowed from the artery that it failed to form the usual recognized clot, which was the only striking condition of the blood on post-mortem.

As soon as death had ensued we proceeded to lay open, beginning at the pharynx. In brief, the post-mortem revealed but little else except the exhibit before you, of which the œsophagus presented a thickened condition anterior to the cardiac orifice 16 inches, the base of the pouch beginning at the orifice extending up the œsophagus was 10 inches and held by actual measurement 77 ounces and presented somewhat the appearance of a miniature stomach. The œsophagus showed a rupture of its muscular walls for 10 inches, beginning at the orifice, leaving intact only the mucous membrane. The orifice was impervious to fluids to the extent that the dilated pouch filled with water and the œsophagus ligated the fluid could not be forced through the orifice by pressure on the pouch. This thickened condition at the time of the

post-mortem varied in extent from an inch and a half to two inches and occupied the orifice well into the stomach. The stomach otherwise presented no abnormal condition.

The lungs, the liver, the spleen, the pancreas—in fact, all the different organs—disclosed no abnormal appearance except the exhibit before you and a shriveled condition of the small intestines, which resembled more those of a sheep in size. The stomach being entirely empty and the only fluid anterior to the duodenum was retained in the dilatation or pouch noticed on the œsophagus and occupying a position in the thoracic cavity. The small intestines being entirely empty, except a heavy, yellowish-brown, fetid mucous, the cæcum contained about two quarts of fluid. The floating colon contained a few small yellowish pellets.

The history given you conforms to the data taken at the time of post-mortem.

Gentlemen, you have this case before you. I have endeavored to present the facts surrounding the case and the symptoms present as fairly as I believe it possible. Being interested in the matter and having an inquisitive disposition to satisfy, I have brought this subject before this select body that from the discussion that usually follows on such an occasion some very important facts and intelligent information may be derived therefrom and that before the conclusion of this topic you will have fully decided if this be a true case of carcimona of the stomach or merely an abnormal condition resulting from an injury, as a choke, kick or bruise sustained while pressing against the trying pole during the stud season.

CRYPTOGAMIC POISONING.*

By HAL C. SIMPSON, V. S., Denison, Iowa.

About October 20 last I began to meet some very unusual cases with typical actions, history and results. Will give a report of one case:

Bay gelding, coming three, weight about 1,400 pounds, temperature 103.2°, pulse 86, respiration 38, mucous membranes injected and very dry, stiffness of all four limbs, no lack of control, bathed in perspiration, particularly around elbows, stifles and inside of hind legs. History of no fæces nor urine passed since

* Reported to Meeting of Iowa Veterinary Association. January, 28-30, 1907.

first noticed affected; trembling of caput muscles, slight colicky pains, usually of short duration. During the pains would lie down and as a rule stretch out full length. Balance of time would pick at hay and would eat some grain and drink slightly more than usual amount of water. Extremities cold.

Made rectal examination and withdrew a large quantity of very dark fæces; pressure on bladder caused expulsion of the largest amount of urine I ever saw come from a horse, dark colored—bloody, in fact—and of alkaline reaction and some odor.

The pulse, temperature and respirations were not as high in all cases and some were not as stiff as others and few would refuse one kind of food but eat ravenously of others. Some ate or drank nothing.

These horses had been running all summer on bottom pastures, through which a creek ran; not the same one; some overflowed possibly in spring; mostly blue grass; no unusual weeds that owners knew of. Horses had been pastured in all pastures for years previous, and in a few cases other horses were in the same pastures and showed no signs of the disease. Weather at the time was and had been for, say, a week previous damp, cloudy and quite chilly for the season of the year. One or two nights there was a very heavy frost, and a number of times there was a heavy damp fog over the bottoms all night.

Some cases were down and unable to get up even with help. In a few cases the bowels were quite loose. All were young except one, an aged mare nursing a colt and with foal again. I have since heard of two mares that had slight attacks and recovered that were with foal. Both aborted some time after.

There was a great deal of this condition in my county about this time, and also farther down the Boyer River. I treated about twelve cases myself, and I know of possibly twenty others that were treated, and I also know of a number, say about ten head, that died before anything could be done. I heard of one man who lost six head, another four head, one who lost three and several who had two die.

In the way of treatment I tried on different cases a number of different remedies. A physic usually, on some eserine and pilocarpine, arecoline hydrobromate, oil, aloes. Those cases that were down received nux vomica and strong liniments down their spine. Others required sedatives. Potassium iodide ʒij, fl. ex. digitalis mxxx, every two hours, gave, possibly, the best results.

MESENTERIC HERNIA IN FILLY—REMOVAL BY AMPUTATION—RECOVERY.

By A. J. TREMAN, V. S., Lake City, Iowa.

A brown filly, coming two, owned by a druggist, had been cared for at a farm during the winter. The care had consisted of what the animal could forage and no shelter but an open shed and strawstack. This naturally resulted in a very poor physical condition and a coat of thick long hair, in which there were a large number of lice.

March 21, 1906, she ran into a fence and caused a large swelling in the left flank. March 31 the writer was requested to go out and examine the colt. We found a fluctuating, non-circumscribed tumor about 14 inches long and 8 inches wide, in the centre of which was a firm substance closely adherent to the abdominal wall, but no hernial opening could be discovered. An exploratory opening revealed a large amount of serum and some mesentery. As the animal could not be taken care of where she was and was quite weak, it was decided to move her to town for treatment.

April 7 there was a rise of temperature and symptoms of infection and it was decided to operate at once. The seat of operation was shaved and disinfected, the animal cast and anæsthetized. The incision exposed a large mass of mesentery firmly adherent to the abdominal wall and to the sides of the hernial opening, which was about one and one-half inches in diameter. The mass was loosened and ligated as closely into the hernial opening as possible and removed. It weighed nearly two pounds and was considerably infected. The hernial opening was completely closed by the adherent mesentery and no attempt was made to suture it. The incision was left partly open for drainage and required daily antiseptic irrigation for some time, but the patient made an uneventful recovery, and by August 1st one would scarcely notice scar or swelling.

In our study of the mesentery we find that in human surgery quite large portions are occasionally removed without unfavorable results. And we know that in laparotomies of smaller animals portions are often removed. Also, that that process of the great omentum which sometimes in foetal life becomes attached to the testis and may be included in an inguinal or scrotal hernia, or may not show itself until it descends through the opening after castration, is successfully removed after ligating. In these cases

the contained blood vessels are usually small. In the recited case the blood vessels were very large and indicated it was a loop of that part directly attaching to the small intestines. It would seem that we may remove considerable portions of any part of the mesentery when necessary.

A DENTIGEROUS CYST CONTAINING 104 TEETH.*

By A. J. TREMAN, V. S., Lake City, Iowa

February 1, 1906, a sorrel colt, coming two years old, was brought for treatment. Examination revealed a bony enlargement about one inch anterior to the roots of the first premolar. It had been noticed but a short time before. As there was nothing to be found but simply the hard enlargement, and it was too far anterior for the teeth, the owner was advised that probably it had been caused by a bruise and that a blister might aid absorption. Occasional reports indicated that the tumor was gradually enlarging. May 31 the animal was cast and a trephine opening made in the centre of the tumor. There appeared to be a thickening of the bone, and after trephining about three-quarters of an inch in depth it was decided we were dealing with an osteoma and to leave it alone. The opening healed rapidly, except a small tract as large as a good-sized knitting needle. July 31 the owner reported that the tumor was still growing and beginning to interfere with respiration in that nostril. Examination revealed a small fistulous tract leading from the trephine opening downward and into the oral cavity just anterior to the first premolar. Here was found a necrotic area a little more than one inch long and one-half inch wide. The animal was cast and this necrotic tissue removed with a curette, revealing the crown of a molar tooth about one inch above. The original trephine opening was now enlarged so as to permit the removal of the tooth. Around this were found 104 supernumerary teeth of varying sizes, closely packed together and joined by a fleshy pulp. The cyst cavity was quite large, but under daily antiseptic irrigation soon filled with granulations and the external opening healed, although a considerable portion of the enlargement yet remains.

The walls of the cyst were formed by the two plates of the anterior portion of the supermaxillary bone, these being pushed apart, more to the exterior than to the interior. The large tooth lay immediately beneath the outer plate and was penetrated by the

* Reported to Meeting of Iowa Veterinary Association, January 28-30, 1907.

trephine during the first operation. The cavity extended upwards to the inferior extremity of the inferior maxillary sinus and close to the roots of the first temporary molar, showing that the large tooth in the cyst was the misplaced permanent molar.

RAPID RECOVERIES FROM PARTURIENT PARESIS.

By J. FERGUS DONNELLY, St. John's, Newfoundland.

I was called by a farmer at 5 P. M. one day about the middle of June this year to see a cow which had been down since 7 A. M. and was unable to rise. The owner informed me that she had calved three days previously. On arriving at the barn I found a Jersey cow lying on the ground with her head thrown back and in a comatose condition. There were quite a number of farmers present, who said that the cow was paralyzed. I diagnosed the case as parturient paresis and told them that I would have her up and eating in an hour. Naturally they laughed at me and said I would have to put her in slings.

I washed the udder with a 5 per cent. solution of carbolic acid and inflated it with sterilized air and massaged it for five minutes. I then gave a hypodermic injection of strychnine (gr.j) and applied ammoniacal liniment from the occipital bone to the first coccygeal vertebra, which I rubbed in hard for fifteen minutes. I then placed the tail straight out on the ground and rubbed it with my foot, which seemed to drive a shock through the spinal cord. After a minute or so the cow made a bellow and jumped to her feet and began to eat some hay that was in front of her. From the time I started this treatment until she was up and eating was exactly forty-seven minutes.

I have treated another case in this manner with the same success, having no after-trouble with either.

PRECOCITY IN A FOAL.

By R. A. STOUTE, D. V. S., Barbados, West Indies.

A small mare pony and foal were landed here from one of the neighboring islands in June. The foal had four temporary incisors, the corner ones not appearing. The owner says the foal was born September 5, 1906.

After being put together in the stable the foal covered his mother four times during the day.

SURGICAL ITEMS.

BY DRs. LOUIS A. AND EDWARD MERILLAT, CHICAGO, ILL.

AN UNUSUAL SEQUEL OF TIBIAL NEUROTOMY— OPERATION AND RECOVERY.

It is only after having read Dr. Peters' translation of Schmidt's observations on the various neurotomies that the case we are about to relate was attributed with certainty to tibial neurotomy. Although we had suspicions in that direction we had never seen or heard of a parallel case to lend any confirmation of the suspicions until an identical sequel of this neurotomy was observed and reported by Schmidt through Dr. Peters to the readers of the *AMERICAN VETERINARY REVIEW*. The sequel referred to is a freakish stringhalt of the unnerved leg, manifested, not by the excessive flexion or ordinary stringhalt, but by excessive abduction. The leg transcribes a complete half circle at each step. The posterior stride begins by a straight outward jerky fling of the leg, which then, in trailing forward, completes a half circle, landing a little short of the track of the fore foot. The horse is practically disabled; trotting is almost impossible; and the gait is so freakish as to render the affected horse unfit to expose to the public in harness.

Our case occurred about twelve months after the operation of tibial neurotomy had been performed to relieve a lameness due to chronic sessamoiditis. The subject is a trappy gaited cob that had been submitted to peroneal tenotomy some two years before, evidently to cure a real stringhalt. This latter operation was successful, as no evidence of stringhalt had ever been observed during our examination of the horse for the lameness in the sessamoids. In fact, we had no knowledge that the tenotomy had been performed until the leg was shaved preparatory to an operation to relieve the "abduction stringhalt" that followed the neurotomy. The scar on the previous operation and the absence of the peroneous tendon showed that the tenotomy had been performed and the absence of any excessive flexion between the time of our first examination and the appearance of the abduction showed that the first operation had been successful. The relations if any that existed between these two aberrations of the gait are of course impossible to determine in view of the little that is known about the etiology of stringhalts.

This horse was purchased for use as a runabout horse in a private stable during February, 1905, after having passed the scrutiny of a prominent veterinarian. During March he became slightly lame with symptoms simulating spavin lameness. For this he was first blistered and then fired, with no better results than a constant increase in the severity of the claudication. During the summer months of 1905 he was kept at pasture, being still too lame for service. In the fall, the lameness having shown no sign of abating, the owner sold him in disgust and for a trivial price. During October, 1905, he was presented to us for treatment by the new owner. At this time the diagnosis of chronic sessamoiditis was easily made from the visible changes in the fetlock and the pain provoked by flexing that articulation. Firing and a rest during October and November palliated the lameness, but the cure was not permanent. The lameness returned after a few days of ordinary work in light harness. On December 17th of the same year he was submitted to tibial neurotomy as a last resort, with absolutely satisfactory results. The lameness was promptly cured and the horse worked perfectly from January, 1906, until February, 1907, or about fourteen months in all, when rather suddenly the symptoms of the excessive abduction began to appear. The evolution of this aberration was exceedingly rapid; within two weeks after the first appearance of the symptoms the horse was useless. At first a neuroma at the proximal end of the cut nerve was thought to be responsible for this unusual movement of the leg, and after this had been removed with negative results it was decided to perform peroneal tenotomy, but while preparing for the operation, as above mentioned, it was discovered that the operation had already been performed, evidently some years previously, and before the horse fell into the hands of either of the two owners mentioned in this report.

Operation and Recovery.—While our patient was still upon the table where he had been placed for peroneal tenotomy it was decided to try to modify the abduction by dividing the tendon of the gluteus externus just above the trochanter minor. The region was shaved, thoroughly disinfected and cocainized subcutaneously. An incision was made through the skin, fascia and muscles so as to expose the trochanter in its center; then the tendons attached to the upper border of the trochanter were divided with a probe-pointed bistoury. The skin and fascia were closed with interrupted sutures with the exception of a small drainage orifice at the distal commissure. Upon leaving the

table there were no modifications of the symptoms; in fact the spectators remarked laughingly that the gait was even worse than before. The wound healed slowly during the succeeding four weeks, at the end of which time the horse was put to work almost cured. At this writing, some three months after the wound was healed, no trace of the aberration remains.

* * *

MUSCULAR ATROPHY FOLLOWING AZOTURIA.

In the atrophy of the crural muscles supervening the acute stages of azoturia the veterinary practitioner has to deal with a very obstinate condition that is always certain to test the patience of the owner, who during the long period of the disability of his horse is equally certain to be given a variety of opinions from various sources as to the nature of the disease and its final outcome, all of which is not to be wondered at after the horse has crippled about week after week and month after month without showing any tendency to improve. In these cases it is the duty of the practitioner to submit a favorable prognosis, but to remain non-committal as to the duration of the disability. Sometimes four months, sometimes twelve months will pass before the wasted muscles are restored to their normal condition. The atrophy always continues long after the practitioner has exhausted all of his ammunition. Liniments, blisters, cautery, setons, electricity, strychnine and all other expedients are only so many useless, ineffective treatments, and after all of these have been tried in hopes of stimulating the nutrition of the wasted region, the owner's patience will also be found to have been sorely tried unless previously impressed with the fact that a long time will be required to effect a cure. In cities where the cost of keeping horses is great this sequel of azoturia is equivalent to the loss of the horse unless the value is exceptional. In fact, it often happens that after a practitioner has received the congratulations of his client for having "cured" a bad case of azoturia, he is told after a few months of ineffective treatment of the atrophy, that it would have been better if the horse had been killed in the first place.

As to its pathology, it is reasonable to suppose that the wasting is of nervous origin. Central? Perhaps. Peripheral? Well, probably. Who knows? The behavior of the process is the typical behavior of atrophy due to paralysis of motor nerves. The suspended innervation destroys the contractility and wasting

rapidly follows, and although the seat of the nervous lesion is not known, the long time that always elapses before the muscles begin to regenerate, is evidence that it is located some considerable distance from the periphery. The loss of volume, as in the case of other analogous atrophies, is due to cellular loss. The cells diminish in size and in number, but the intercellular substance remains unchanged, ready to serve as support for the cells when they regenerate under the stimulus of the restored nerve supply. There are no degenerate changes; the normal chemical constitution of the cells is maintained. In short, the wasting of the crurals is a *true atrophy due to suspended innervation*.

The treatment should be limited to good healthful exercise in the paddock, at pasture or even at light work, with plenty of nutritious food. External applications and internal medicine intended to hasten the process are disappointments. The former may be resorted to when the muscles begin to regenerate spontaneously, with the object of stimulating the restorative process, but as long as the nerves remain inactive external irritants are useless. As the restoration of the lost volume is subordinate to the slow regeneration of the paralyzed nerves and as the latter is not materially influenced by either internal or external medication, it is plain that all treatment except exercise is useless.

The prognosis is always favorable, although four, five, six or even twelve months may elapse before the full volume of the region has been restored. There seem to be no exceptions to this favorable prognosis. Every case will finally recover, despite the very discouraging persistency of the atrophy in some instances. It is therefore the practitioner's duty to recommend an economical subsistence for his crippled patient so that the cost of the "treatment" will not exceed its health valuation.

Add to the veterinarian's fee of, say \$20, the cost of keeping a horse in the country for ten months at \$10, brings the total expense of treatment to \$120, which is much less than the price of the kind of horses that usually contract the disease. A Chicago veterinarian who also owns a farm a short distance from the city, has for a number of years made it a practice to purchase as many of these crippled horses as possible, and as they were always purchased for a ridiculously low price when the owners, in spite of advice to the contrary, were convinced of their incurability, the traffic has yielded a handsome profit.

This favorable prognosis, in rare instances, ends in disappointment from the development of more or less serious lesions of the

articulations of the opposite leg from the burden of supporting the entire weight of the hind quarters, and sometimes the affected leg develops a ringbone from the constant rolling motion to which the pastern is submitted. These unfavorable terminations, although not numerous, should be kept in mind in predicting the outcome of the condition in exceptionally heavy horses.

UPHOLDING THE NEBRASKA VETERINARY LAW.—The following sensible opinion and ruling by a judge of the District Court of Omaha is not only of interest and value to the profession at large, but is a decided victory to the veterinarians of Nebraska. Dr. Ramacciotti had Van Gordon arrested last year for using the title V. S., and he was found guilty by a jury. He applied to the same court for a new trial, and the following clipping from the Omaha *World-Herald* of July 14 shows the final ending of the case: "Explaining his reasons with a unique interpretation of the law governing the treatment of dumb brutes, Judge Troup of the criminal division of district court has decided that the statute restricting the practice of veterinary doctors is good and has fined A. L. Van Gordon \$25 and costs for its violation. The constitutionality of the law was attacked. The law does not forbid the practice of veterinary medicine and surgery without a state license, but it forbids the right to use the title of veterinary without this license. Judge Troup declared that the law can be upheld on the theory that that portion of the dumb brute creation which has been enslaved and made the servant of man, has abstract rights in law as an animal independent of the special provisions which forbid cruelty to him, because that shocks the human sensibilities. He held that the animal is entitled to his compensation just as a human laborer and that that compensation is food, drink and humane treatment. For this reason the legislature has a right to enact statutes protecting dumb animals from quack veterinarians, just as it enacts statutes protecting human beings from quack physicians, that it can require that the person who sets himself up as able to treat the ailments of animals must be shown to have a fair degree of skill as determined by a state examination."

"WOULD NOT DO WITHOUT THE REVIEW for \$10 a year. Somebody else's experiences are sometimes worth more than references to text-books—at least, to a very busy man."—(*John Pierce, V. S., Okmulgee, Ind. Ter.*)

ABSTRACTS FROM EXCHANGES.

ENGLISH REVIEW.

By Prof. A. LIAUTARD, M. D., V. M.

PERINEAL HERNIA FOLLOWING CASTRATION FOR ENLARGED PROSTATE GLAND [*George P. Male, M. R. C. V. S.*].—An old Aberdeen terrier, very great pet, has suffered much with enlargement of the prostate, difficulty in passing urine, great pain and straining on defecation, straddling gait, pain on manipulations, etc. Growing worse, he was castrated and seemed to get much relief for some few months, when the bad symptoms returned. He was unable to urinate and seemed in great distress. Attempts were made to pass a very small catheter, but without success. At that time a large swelling was noticed at the side and below the root of the tail. Was it the bladder that had been displaced? Such proved to be the case, as on performing laparotomy it was found impossible to return it to its place until the swelling had been emptied by puncture with a fine trocar made in the perineal region. The bladder remained in position only for a while, and as soon as it began to fill it returned to its abnormal position. An attempt was made to secure with stitches to the peritoneum, but these would not hold. The animal was allowed to live some little time, having his bladder punctured as required, but finally he was destroyed. At the post-mortem the bladder was found immediately under the skin in the perineal region, lying freely into a cutaneous sac. The inner surface of the bladder showed small red spots of granulation tissue, the only marks of the several punctures that had been made.—(*Veterinary Record.*)

ACUTE DIABETES INSIPIDUS [*John Connachie*].—Aged cart gelding. No previous attack, although a little unthrifty every spring. One day he showed an extraordinary thirst, and while at work could not pass a watering trough without stopping to have a drink, no matter how severely punished he was to prevent it. He then would simply plunge his head into the water and drink so much that his bladder could not retain the excess of urine, which was passed almost continuously when walking. Symptoms of the next day: Extremely tucked up and empty

look, considerable difficulty in breathing, mucous membranes blanched and pulse atonic, temperature 105° F.—in short, looking like an animal in one of the stages of hæmorrhage, as seen when being bled to death. No appetite, and breath very foul. Treatment: Water withheld, good thick gruel and milk instead. Iodine, sulphate of iron and gentian were prescribed. Feeding with hay of best quality. After a week animal began to improve and recovery followed with some tincture of iron in limited quantity of water.—(*Veterinary Record*.)

CYSTIC CALCULUS [*Livesey and Gray*].—At a meeting of the Central Veterinary Medical Association the former showed a cystic calculus taken from the bladder of a terrier bitch and also a remarkable specimen taken from a Lhasa terrier weighing about 15 pounds. The contents of the bladder were in two glass dishes, the calculi consisting of five large stones fitting and adapting themselves to the shape of the bladder. There were also several small stones and a good deal of sand. In both cases the condition had been diagnosed at least two years previous and no serious trouble had been observed. No operation had been done, and one day death relieved the poor sufferer. It was an evidence that large stones could remain in the bladder for two years or more (the author had known of one case that lasted five years) without causing any ill effect. The second presentation was made by Mr. Gray. A specimen of a cystic calculus removed from a bitch by the suprapubic operation. The calculus could be felt through the abdominal walls and was the size of a fowl's egg.—(*Veterinary Record*.)

HYPERTROPHIED HEART [*Captain Rudd*].—At the Scottish Metropolitan Veterinary Medical Society, the author presented the heart of a troop horse which was hypertrophied and weighed immediately after removal *nineteen and three-quarter pounds*. The pericardium was covered with false membranes and contained about one quart of fluid. The pulmonary valves showed very large vegetations, with one mass of growth being partially calcified and extending into the cavity of the artery. The other valves were slightly thickened. The animal had been suffering with rheumatic fever and had been under treatment for eight weeks.—(*Veterinary Record*.)

INTERESTING CASE OF INTERNAL RUPTURE [*Charles Rose, A. V. C.*].—A charger is taken with colic. He has spasms of pains somewhat peculiar. The forelegs are straightened and he has spasms of the intercostal muscles gradually coming on.

The lips are drawn back and squeals are emitted, indicative of severe pains. This condition lasts about one minute and then passes off, to recur after about five minutes. This condition was kept up until death. The diagnosis was reserved. Anodynes prescribed. Post-mortem: Abdomen contained several gallons of blood. Very extensive rupture of the diaphragm muscle on the left side and a smaller one on the right. There was also rupture of the pleura of one lung, although these organs were free from disease.—(*Veterinary Journal*.)

RENAL CALCULI IN A HORSE [*Prof. G. H. Wooldridge, F. R. C. V. S.*].—A specimen taken at a knacker's yard from a horse destroyed on account of incurable chronic lameness. There was no history of anything having been suspected wrong with his kidneys. One of these organs was quite normal. The other looked as if it had been petrified. Almost the entire kidney structure was gone. The whole weight of that kidney was 3 pounds 12 ounces. The calculi weighed 2 pounds 7½ ounces. One of the calculi, the largest, weighed 2 pounds 4 ounces. There were a very large number of smaller ones. They were made of carbonate and phosphate of calcium, without ammonium or magnesium and no uric acid.—(*Veterinary Journal*.)

A CASE OF GASTROTOMY [*R. J. Foreman, M. R. C. V. S.*].—A seven-months-old Scotch terrier swallowed a rubber cork. After ten days, continuous vomiting set in, and in two days more the condition was alarming. The cork was easily felt through the abdominal walls. Well prepared for the operation, an incision was made, the abdomen opened and the cork well made out in the stomach. At that moment breathing stopped, but was re-established after five minutes of application of the usual procedure in similar cases. The stomach was drawn out and the cork removed. A second time artificial respiration, ammonia vapor and cold effusions on the head had to be resorted to as respiration had again stopped. As these means did not seem to do any good, after ten minutes three minims of Scheele's hydrocyanic acid were injected into the pleura and almost immediately started gasping. Breathing, with a little help, returned. Operation was concluded and 25 days later the dog was eating meat and bones. One day he licked his dressing, tore the wound and it had to be stitched. The same day he swallowed a wool dressing of his wound and passed it a day or two later. He improved and was ready to go home, when he helped himself to some blister ointment of biniodide of mercury. He got all right

again, when three days after he took plentifully of some hoof oil. Result, vomiting and diarrhœa. Finally went home.—[*Veterinary Journal*.]

TWISTED BOWEL, ACCOMPANIED BY CALCULI [*A. S. Hodgkins and Son, M. R. C. V. S.*].—Bay van gelding is taken during the night with colic. He is covered with perspiration, paws continually, tries to pass fæces and has most haggard expression of countenance. Temperature is up to 104°. Physic ball and chloral hydrate are given. When rectal examination is made a calculus is detected and extracted with little manipulations. In so doing the floor of the rectum was ruptured. The stone weighed 1 pound and 7 ounces. The horse died the next day. The post-mortem revealed a twisted bowel and two other calculi wedged in the small intestine. The weight of the three stones was 3 pounds 10 ounces.—(*Veterinary Journal*.)

FRENCH REVIEW.

By Prof. A. LIAUTARD, M. D., V. M.

FEMORO-PATELLAR ARTHRITIS [*A. Barrier*].—As the result of a kick, a femoro-patellar arthritis develops and resists the following treatments: Blistering applications and injections of Van Swieten, relative immobilization of the leg with hobbles, introduction of nitrate of silver pencils in the fistulous tracts, that of Egyptiacum ointment, injections of peroxide of hydrogen, of chloride of zinc, packing of the fistula with tannin, tannoform, injections of perchloride of iron, of camphorated phenol, of tincture of iodine and finally draining of the fistula and injections of muriate of cocaine, 1 in 20. All these treatments are without results. Finally, as the blue of methylene has been recommended in the treatment of some complicated wounds the author resorts to this mode of treatment for this case, now in his hands for seventy-five days. Injections of blue of methylene are substituted for those of cocaine, which were used at that moment. From this day and in a short time improvement was noticed. The synovial secretion diminished and soon stopped. The drain tube was removed, the fistula healed and recovery rapidly took place.—(*Rec. hygie. et méde. vétéri. militaires; Revue Générale*.)

VOLVULUS OF THE FLOATING COLON AND OF THE RECTUM [*J. Dignac*].—The horse "Cavalier," aged 13 years, has colics.

Taken to the hospital, his manifestations suggest the idea of urinary trouble and rectal examination is made. The hand feels downwards and to the right an intestinal loop, which at some centimeters of the anus turns to the left and then forward in a straight line. In this last portion the intestine is much dilated. There is volvulus of the floating colon without knot, as defecation is normal. Reduction is impossible and laparotomy is too risky, as the case is probably of old standing. The animal is kept under observation. After a few days he gets worse, and on rectal examination a rupture of the rectum is detected about 30 centimeters from the anus. The horse died a few days later. Post-mortem: Nothing important, except in the abdomen. Folded colon is covered with alimentary substances, cavity contains about 15 liters of rosy liquid, peritoneum is dark red color, the whole intestines are inflamed, floating colon filled with fæcal matters, at 20 centimeters from the pelvic curvature there is a transversal laceration. At the entrance of the pelvis there is a large pouch filled with fæces. The rectum opens in it at one end. At the other forward end is the small colon bent to the right and backwards, attaching itself to the outside of the pouch and then resuming its normal direction forward to the cavity of the abdomen. The pelvic curvature is adherent to the anterior extremity of the pouch. This peculiar lesion has not yet been recorded, at least as far as the author knows.—(*Revue Vétérinaire*.)

SHOCK CEREBRAL—FRACTURE OF THE SPHENOID AND OF THE TUBEROUS PORTION OF THE TEMPORAL BONE—POST-MORTEM [*M. Chanier*].—An English thoroughbred, while being broken to harness, reared, fell backwards and remained on the ground. Seen a few minutes after, he is found lying on the right side, with accelerated breathing, heart beating rapidly, pulse weak. The left eye is dull. A small stream of blood oozes from the nostrils. This last, with the history of the case, suggests the diagnosis of fracture of the cranium. Cold water is applied on the poll. After a few minutes the horse succeeds in assuming the position of a sphinx sitting, which he keeps for about 20 minutes. Then blood is observed running from the right ear, probably due to fracture of the temporal. The right eye is somewhat congested and sleepy. The ocular globe is constantly pivoting in its cavity. The condition of the pupil cannot be seen in the right, but in the left eye it is dilated. Soon paralysis of the right side is marked. After another hour the animal attempts to get up, but fails, but succeeds 20 minutes later. Assisted and supported

in standing, he begins to move and pushes forward. In moving he keeps his fore legs far apart and advances only with short small steps. There is also vertigo, as the animal fears falling. He is with great difficulty brought to a stall, where he at once falls down. Taking careful consideration of all the symptoms, a diagnosis is made of cerebral shock, with hæmorrhage in the posterior part of the encephalon and fracture of the sphenoid bone. At the autopsy all the organs were found healthy except the head. Besides the lesions resulting from bruises and partial hæmorrhages, there was found a fracture of the superior part of the sphenoid, involving the basilar process of the occipital with a split extending from the right carotid notch to the subsphenoidal canal, orbital hiatus and the right temporal bone. The tuberos portion of this bone was crushed and the subuliform process and hyoid bone were separated from each other. The brain was congested, but otherwise healthy. Small hæmorrhages existed in the lateral ventricles, the cerebellum and the bulb.—(*Recueil de Médecine Vétérinaire*.)

NON-HEALING WOUND OF THE FLANK, CAUSED BY A DEAD FŒTUS IN THE UTERUS OF A CAT [*Blet, Student*].—A she cat carries on the left hypochondriac region a wound from which escapes a blackish pus. It is the result of a bite inflicted by a dog a month and a half ago. The cat at that time was pregnant. For a month the wound did not seem to give any trouble. It progressed toward cicatrization, until now it is a fistulous sore which discharges a very offensive pus. A probe introduced in it comes in contact with a crepitating mass with some little hard substances. A forceps is introduced and pulled out fragments of skin, hairs and bones. The difficulty was due to the presence of a dead fœtus. The tract was opened, the cavity emptied of its contents, thoroughly disinfected and recovery followed. The uterine horn torn at the time the bite was inflicted, had contracted adherence with the edges of the injured abdominal walls and prevented the escape of all pus or septic substances into the abdomen. For that reason the cat escaped peritonitis.—(*Recueil de Médecine Vétérinaire*.)

THE KANSAS CITY VETERINARY COLLEGE is expending twenty-five thousand dollars in the erection and equipment of an annex to its present large college building. The growth of the college is typical and in keeping with the city in which it is located.

BELGIAN REVIEW.

By Prof. A. LIAUTARD, M.D., V. M.

SIMULTANEOUS CASE OF THROMBOSIS OF THE POSTERIOR AORTA, GREAT MESENTERIC AND OF THE VENA PORTA IN A HORSE—CONSIDERATIONS UPON THE PATHOLOGICAL PHYSIOLOGY OF THE THROMBOSIS ON ARTERIAL AND VENOUS BLOOD-VESSELS OF THE ABDOMEN [*Professor Gratia*].—A three-year-old filly has shown symptoms of lameness of the hind legs, intermittent in its character. At first her general condition was good, but it soon changed, and gradually the animal lost flesh and was in a state of excessive marasmus. At the post-mortem the following lesions were found: An obliterating thrombosis of the aorta by an enormous clot, hard, partly adherent and extending into the external and internal iliacs; thrombosis of the renal arteries; two verminous aneurisms of the right and anterior trunks of the great mesentery, which is also obliterated by clots; a thrombosis of the trunk of the hepatic artery extending as far as the origin of the right gastro-epiploic artery, and, finally, a thrombosis of the portal vein involving the trunk itself, but also the afferent and the efferent branches of this vessel. The liver was congested and weighed 9 kilogrammes 850 grammes. The spleen was three times its normal size and weighed 3 kilogrammes 80 grammes. In looking over the literature of these troubles in veterinary works the author has found a number of similar cases, and among them those of Colin, of Alfort. In a donkey that had died in a very emaciated condition after having exhibited for a long time abdominal and cerebral symptoms, he found a suppurative thrombosis of the portal vein. In an old mare which had had dull colics and diarrhoea there were thrombosis of the arteries and veins of the colon and cæcum and of the portal vein. In a horse of dissection was found a sclerous thrombo-phlebitis of the portal vein. Professor Gratia then studies the three categories of those lesions and concludes: (1) To the etiological point of view most of the observations show that pylethrombosis is not necessarily related to pylephlebitis; (2) that in two cases only the inflammation of the vein has been the cause of the formation of the clot—in the first it was a thrombo-phlebitis of suppurative nature, in the second the thrombo-phlebitis was sclerotic. Besides, to the ordinary causes of the disease in man may be added for the horse the venous stasis by deficiency of the *vis à*

tergo resulting from a primitive thrombosis of the mesenteric arteries.—(*Annals of Belgium.*)

MULTIPLE ABSCESSSES OF THE SPLEEN IN A FILLY [*A. Van den Eeckhout*].—The animal was two years old and presented to the clinic to be treated for an umbilical hernia. She has always been a poor eater and is in a very emaciated condition. The hernia has been treated before and now there is a relapse. The ring is sufficiently large to allow the introduction of the four fingers of the hand brought together in a cone. As the animal was taken with a slight cold the operation had to be postponed for a few days and then was performed by the application of a clamp after opening of the hernial sac. There were no adhesences and the operation was very simple. The temperature was 38.5° C. The next day it rose to 39.2° , and with this elevation appeared a series of vague symptoms which lasted until death. Temperature varied between 39.3° and 39.5° in the morning and 39.6° or 39.9° in the evening. Appetite is always poor; she eats a little grass and refuses hay or oats. There is great thirst and polyuria. The mucous membranes are very pale. Nothing on percussion nor auscultation. Rectal examination reveals nothing. Tuberculin test is negative. The wound of the operation goes on well toward cicatrization. Another minute examination reveals to the left hypochondriac region an abnormal dullness on percussion. This extends on a surface bound in front by a line which from the fifteenth rib runs obliquely backwards and downwards toward the summit of the olecranon. This abnormal dullness helps to locate the cause of the trouble, but its nature remains unknown. The animal grows worse and finally dies in a cachectic condition. Post-mortem: Sero-bloody fluid in the abdomen. Peritoneum shows numerous minute bloody vegetations. It is somewhat thickened. The hernial ring is closed. The spleen is very large, weighing 9 kilogrammes 750 grammes. It measures 21 centimeters at the base and 102 centimeters on its posterior border. It has a rupture involving its whole thickness and extends from the anterior angle of the base to the middle of the posterior border. The splenic pulp is normal in some parts and in the others the seat of numerous abscesses, some of which are connected and others isolated. They resemble tuberculosis collections, but they are not tuberculous. The microscopic examination of the pus has revealed numerous streptococci, but no tuberculous bacilli. There were no tuberculous lesions in any part of the body.—(*Annales de Bruxelles.*)

INTRA-RACHIDIAN TUMOR IN A DOG [Mr. Poulin].—This dog is two and a half years old, very active. He has had the habit to run after all the dogs he meets in the streets. He is also very intelligent, and has been taught to make a somersault, raising himself on his forepaws and turning over, falling on his back. Lately he moans, and while his general condition is good he is constipated and has an abdomen very sensitive to pressure. He seems also less willing to run. It is difficult for him to go up and down stairs. He now and then has pains and he refuses to make his exercises or does it imperfectly. He also has subjective or imaginary pains, as when he sees some one approach and touch him kindly he screams more or less. On careful examination a band of complete anesthesia on the right and a little back of the last rib is detected and also a marked hyperæsthesia in the entire posterior half of the body, including the hind legs. The dog has difficulty in sitting, to go up and down stairs; he is stiff in walking. There is polakisuria and the examination of the urine reveals nothing abnormal. The diagnosis is uncertain, but the presence of an intra-rachidian exostosis is suspected, and notwithstanding the severity of the prognosis a treatment is prescribed of iodide of potassium. After twenty days a report came that the dog was all well—a rather surprising report—followed ten days later by another that he had died with cerebral congestion. Post-mortem: The rachidian canal being opened, at one centimeter back of the last rib was found on the floor of the canal not an exostosis, but a tumor as big as a bean, elongated, united to the superior common vertebral ligament and somewhat pedunculated. This growth is lodged partly in a depression of the vertebræ, a little on one side of the median line. It is compact and firm in its anterior portion and softer and more vascular in the posterior. It contains a little mass of caseum in which no tuberculous bacilli could be found. It was only a small ordinary abscess encysted, due to an effort or to a laceration when the little fellow had been performing his violent exercises.—(*Annale de Bruxelles.*)

A FREAK CALF.—Dr. Nelson N. Lefler, Batavia, N. Y., forwarded to the REVIEW two photos of a calf, eight weeks old, which was born without eyes or tail. The animal is perfect in every other way. The eyelids appear normal, but the palpebral surfaces are united, and there is no eyeball. The photos, being proofs, had faded until unsuited for reproduction.

ARMY VETERINARY DEPARTMENT.

WAR DEPARTMENT RULING AS TO PERSONAL EQUIPMENT, UNIFORM AND TACTICAL POSITION OF THE VETERINARIAN.

WAR DEPARTMENT,
OFFICE OF THE CHIEF OF STAFF }
WASHINGTON, June 13, 1907.

Memorandum for the Assistant Secretary of War:

Subject: Pertaining to the personal equipment, uniform and tactical position of veterinarians.

On May 13, 1907, Veterinarian Walter Fraser, Thirteenth Cavalry, requested a decision on certain matters affecting veterinarians, which was forwarded to the War Department by the post and department commanders. The subjects have been carefully considered and report and recommendations are submitted herewith.

The following questions were asked by Veterinarian Fraser:

1. What is the equipment for veterinarians in the field?
2. Whether or not veterinarians are authorized to carry a sabre or what weapons of defense, as they are not protected by the Geneva Cross, so must be a combatant.
3. Whether veterinarians are authorized to wear the U. S. on their collars, as they belong to the regular organization and are not contract or civilian employees.
4. What is the position of a regimental veterinarian with a command on a road march or at ceremonies?"

The Quartermaster-General, to whom the paper was referred, remarked that the letters U. S. should be omitted from the uniform of veterinarians and the Chief of Ordnance is opposed to veterinarians wearing the sabre, but sees no objection to their carrying whatever firearms they desire during active service.

Before discussing the particular points presented it will be well to inquire into the status of a veterinarian under the law and regulations. He is specifically provided by law in the organization of regiments of cavalry and field artillery, and therefore constitutes a part of the Army, but as the pay and allowances of a second lieutenant, mounted, only are conferred upon him and as there is no specific grant of military rank he

cannot be regarded as a commissioned officer of the Army. He is appointed in writing by the Secretary of War for an indefinite period and is discharged by order of the Secretary of War. He is required to take an oath, the same as is required of commissioned officers, and is required to perform all the duties belonging to his appointment in conformity with the rules and regulations of the service. He has no regular rank, but is borne on regimental returns below commissioned officers. He is paid out of the money appropriated to be disbursed and accounted for by the Pay Department as pay of the Army, and it has been held by the Comptroller of the Treasury that he is entitled to longevity increase after each five years of service. Army Regulations, fixing grades of rank (paragraph 9), place a veterinarian below a second lieutenant and above a cadet. The Judge-Advocate-General of the Army has repeatedly expressed the opinion that a veterinarian is not competent to sit as a member of courts-martial or to perform any of the duties which are expressly required by law to be performed by commissioned officers, but as his status is assimilated to that of a commissioned officer he is eligible for detail as member of boards of survey or councils of administration and may, when no commissioned officer is available, serve as exchange officer or post treasurer and may witness payment to enlisted men. It has also been held that veterinarians not being commissioned officers, are not entitled to the benefits of the retired list.

From the foregoing statement of facts it is clear that a veterinarian is neither a commissioned officer nor an enlisted man, but is what the law designates him, a *veterinarian*, without a specific grant of rank, but with pay and allowances of a second lieutenant, mounted. His status assimilates to that of a commissioned officer and he enjoys many of the privileges of one, but he lacks the primary essential, appointment by the President and confirmation by the Senate.

We can now come to the specific points presented :

1. What is the equipment for veterinarians in the field?

As the status of a veterinarian is assimilated to that of a commissioned officer, his equipment for field service should conform generally to that of commissioned officers for like service.

2. Whether or not veterinarians are authorized to carry a sabre or what weapons of defense, as they are not protected by the Geneva Cross, so must be a combatant.

On February 2, 1904, Veterinarian W. R. Grutsman, Fifteenth Cavalry, was informed by the Adjutant-General of the Army that side arms are not prescribed for veterinarians. This decision disposes of the question as to whether or not veterinarians are authorized to carry a sabre and conforms to the recommendation of the Chief of Ordnance and is in accord with the position a veterinarian occupies. It is true that he does not fall within the limitations prescribed by the Geneva convention and should not be deprived of the privilege of carrying fire arms in actual service. While it is not deemed necessary to prescribe either a revolver or a rifle or both as part of his equipment for field service, yet no objection can be entertained to his so equipping himself.

3. Whether veterinarians are authorized to wear the U. S. on their collars, as they belong to the regular organization and are not contract or civilian employees.

This matter was discussed at length in War Department General Staff report dated August 16, 1906, which stated, in part:

"Paragraph 63, Uniform Regulations, does not allow veterinarians to wear the U. S. on their collars, and it would appear that this inhibition is intentional. * * * The idea seems to have been to limit the U. S. to the officers and men of the military establishment proper. Veterinarians are neither commissioned officers nor enlisted men. They are provided for a part of the regular establishment, as is also the nurse corps (female), but they are not on the same basis as commissioned officers or enlisted men."

As the foregoing was approved by the Acting Secretary of War on August 17, 1906, it appears to dispose of the question raised as to wearing the letters U. S. on the collar.

4. What is the position of regimental veterinarian with a command on a road march or at ceremonies?

While a veterinarian is a part of an organized regiment of cavalry and field artillery he is not a part of the tactical organization, and therefore during drills, parades, inspections or other ceremonies no place is prescribed for him in the Drill Regulations, nor does it appear necessary to prescribe one. His duties are special and technical and are in no way related to the evolution of troops either for offense or for defense. Ordinarily he does not appear, nor should he be required to do so. At inspections he very properly should be at the stables or wherever sick

animals are being cared for. If a veterinary hospital exists, that would naturally be his headquarters.

On the march no place is prescribed for him. If there is a considerable number of invalid animals he would ordinarily accompany them, but his position with a marching command would be determined by the exigencies of the particular service for the day. Therefore the position of a veterinarian at ceremonies, if it is desired that he appear, should be fixed by the commanding officer, otherwise he does not appear except at inspection, when his place is at the veterinary hospital or at the stables. During a march his position should be fixed by the commanding officer.

It is recommended that reply be made as above to the questions propounded. Very respectfully,

(Signed) J. T. KERR,

*Colonel, General Staff,
Acting Chief of Staff.*

A true copy: P. D. LOCHRIDGE, Captain and Adjutant, 13th Cavalry.

Approved: (Sgd.) ROBERT SHAW OLIVER,

Acting Secretary of War.

* * *

ARMY PERSONALS.

DR. GEO. A. HANVEY, Veterinarian U. S. Army, Ft. Riley, Kansas, visited in Kansas City July 11.

DR. J. H. OESTERHAUS, Veterinarian 7th U. S. Cavalry, is *en route* from the Philippines and will be stationed at Fort Riley, Kansas. The regiment is scheduled to arrive in August.

DR. L. E. WILLYOUNG, U. S. Army, Fort Sill, Oklahoma, has been designated as the official representative of the Army at the Kansas City meeting of the A. V. M. A. Dr. Willyoung has recently been transferred from Fort Snelling, Minn., to Fort Sill.

DR. OLOF SCHWARZKOPF, 3d U. S. Cavalry, stationed at Camp Stotsenburg, Philippines, was a victim of physical breakdown from overwork and the tropical heat in April and was transferred to Camp John Hay, Benquet, for recuperation and temporary duty. This camp is in the mountains, at a 6,000 foot elevation, and a letter from the Doctor, dated May 31, gives the good news that he is rapidly rounding to under the influence of the pure, cool air and abstinence from the deadening effects of routine work. Mrs. Schwarzkopf was with him and he reported her as being in good health.

MALADIE DU COIT AT LETHBRIDGE, CANADA.

Some few years ago considerable excitement was caused among veterinarians and horse breeders in Canada by the reported diagnosis by Inspector Burnett, Veterinarian of the R. N. W. M. P., of a case of dourine, maladie du-coit, or equine syphilis, near Lethbridge, Alta. Later researches found other horses affected, and these were, under the orders of Veterinary Director-General Rutherford, quarantined. Several United States veter-



A MALE PATIENT AT THE LETHBRIDGE QUARANTINE STATION.

inarians and pathologists visited the quarantine station several miles out of Lethbridge to confirm or dispute the diagnosis. So far as we know the diagnosis was not confirmed by the gentlemen. The disease was traced to Montana, from which State, by the way, Canada has received several seedings with glanders and other equally undesirable animal diseases. One United States scientist said the disease was not dourine, as the *Trypanosoma equiperdum*, found in typical cases, could not seemingly be demonstrated. The Veterinary Director-General established a labo-

ratory at the quarantine station, a ranch of 1,800 acres of fenced land, and after a lot of careful painstaking investigation Dr. A. E. Watson, of the Health of Animals Branch, found the parasite in material taken from a vesicle in the vagina of one of the affected mares. Confirmation of the find was had by the inoculation of some of the material into a nine-months old foal, which developed plaques, from which specimens of the parasite were taken. Thus the identity of the disease was thoroughly established and a basis found on which to elaborate methods by which the disease may be stamped out. Staff Sergt. Gallivan, V. S.,



A FEMALE PATIENT AFFECTED WITH DOURINE.

was associated with Dr. Watson in the work. Examinations of the blood had failed to show the parasites, and it occurred to Dr. Watson that possibly toxins had been generated in sufficient quantities to account for the absence of the parasites which Dr. Lingard, an investigator in British India, stated were to be found in true cases. The Alberta pathologist found the trypanosome ten days after the foal had developed a plaque (a raised spot in the skin, as if a fifty-cent piece had been pushed underneath) at

the site of inoculation. In typical cases seen, the genitals were affected, large swellings and depigmentation (absence of the coloring matter, black spots becoming white), loss of control of the limbs, especially behind, cracking of the joints and a general air of ill health. It is a great honor for the Health of Animals Branch, the Veterinary Director-General and Dr. Watson to be the first on the American continent to demonstrate the presence



VETERINARY PATHOLOGISTS AT THE LETHBRIDGE QUARANTINE STATION. DRS. A. L. MOORE AND A. E. WATSON.

of the parasite in cases of the disease, and is further evidence that the Canadian public are getting value for appropriations made to that branch of the public service. There are many knotty problems to be solved in animal diseases, and we wish the Branch similar success when it tackles them.—(*A. G. Hopkins, V. S., in Farmers' Advocate, Winnipeg, Manitoba.*)

"I AM MORE THAN PLEASED WITH THE REVIEW, and could not get along without it."—(*John F. Smith, D. V. S., Benson, Minn.*)

THE MILK SUPPLY OF WASHINGTON, D. C.

RECOMMENDATIONS OF THE CONFERENCE APPOINTED BY THE DISTRICT COMMISSIONERS.

After months of deliberation, the milk conference appointed by the District Commissioners to frame regulations providing for pure milk, to be embodied in a law, has submitted its report, and it is now up to the Commissioners to refer the matter to Congress, if approved by them.

The report was adopted at a meeting held in the District building yesterday afternoon, Surgeon-General Wyman presiding. The conference has held many meetings, and through committees has obtained much information bearing upon the relation between typhoid fever and other diseases and the milk supply, and if the recommendations become a law there will be no chance that diseased or unclean milk can be sold in the District.

That the price of milk will go up also seems probable, because of the increased expense that will be entailed by the dairymen in producing perfectly clean and pure milk.

Chief among the recommendations is that inspectors, in the proportion of one to each 100 dairy farms, be appointed, at a salary of from \$1,600 to \$1,800 per year and traveling expenses, all to be under a chief inspector, at a salary of \$2,000, and at least half the inspectors to be veterinarians. All of each inspector's time must be given to this work.

WANT ADEQUATE LABORATORY.

In connection with the present Health Department it is recommended that there be provided adequate laboratory facilities to make analyses of samples and that there be established a pasteurizing plant where milk may be pasteurized under the immediate supervision of the Health Department.

When bad or unclean milk is found, the health officer will be empowered to revoke the license of the dealer handling it, and inspectors will have the right to revoke for forty-eight hours, pending the carrying of the case to the health board, any license when the owner is suspected of violating the law.

For the purposes of the law any place where milk is sold will be considered a dairy, and the practice of grocers and bakers handling milk is advised against, except in such cases where the milk is sold in the sealed packages in which it is received.

CLEAN MILK ASSURED.

Every pint of milk sold that does not come from tuberculin-inspected and tagged cattle must be pasteurized, and no cattle may be added to a tested herd until the new cows also have been inspected and tagged. Further, no license may be issued until the prospective dairyman has had all his herd properly inspected and they have been found perfect.

The water supply of all dairy farms, too, will have to stand a rigid inspection, and all dairies must be properly equipped to cleanse and sterilize all receptacles used in the transportation or storing of milk.

Cans on wagons will be sealed and may not be opened except by an inspector, who, in collecting samples, will get one for the vendor, in his presence, and one for the Health Department.. All milk found to be unfit for human food will be denatured with some odorous substance, such as coal oil, or with some coloring matter.

MAY ADVERTISE GOOD DAIRIES.

The health officer will be empowered to advertise such dairies as conform to all regulations, and the owners will be given a certificate showing they are producing what will be termed "certified milk."

Another feature that finds approbation among the physicians is a recommendation that such a laboratory as is desired for other tests be so fitted as to be able to produce modified milk of a certain chemical composition in conformance with physicians' prescriptions.

The matter of refrigerator car service is treated in the report, it being set forth that it is desirable that all trains carrying milk be equipped with refrigerator cars from May 1 to December 1. In this connection letters were read from various railways, setting forth the fact that because of the short distance most milk is carried such equipment, in addition to cooling rooms at stations, would be an expense that would in the end fall on the consumer.

Concerning the matter of education on the subject of pure milk, it is advised that the matter be taken up in the public schools and all pupils instructed as to the necessity for pure milk and told how to distinguish that which is not fit for use.

A series of popular articles, stripped of technical verbiage, explaining how to procure good milk, written by authorities on the subject, for distribution is also recommended.

The Commissioners will go over the report and give it careful attention, as it is quite likely it will be presented in its present shape to the next session of Congress for enactment into law.—(*Washington Herald*, June 27, 1907.)

ANIMAL HUSBANDRY AT THE UNIVERSITY OF PENNSYLVANIA.—Dr. Carl W. Gay, Associate Professor of Animal Husbandry at the University of Ohio, has been appointed Professor of Animal Husbandry at the University of Pennsylvania. Dr. Gay is a graduate of the New York State Veterinary College and also of the Agricultural College of Ames, Iowa, where for a time he taught the practice of veterinary medicine. Dr. Gay has done a great deal of work in general animal husbandry and especially in horse-breeding. His appointment at the University of Pennsylvania will make it possible for that institution to arrange to give a course of instruction in animal husbandry and in "animal engineering" equal to the best instruction in these branches furnished in the agricultural colleges that have heretofore almost monopolized this field. Dr. Pearson has, for a long time, advocated strong courses in these branches for veterinary students. It is his belief that veterinarians should be at least as well trained in animal husbandry as are graduates of agricultural colleges. Veterinarians are frequently called upon for advice in this field and it is necessary that they shall be well equipped. Dr. Gay will also administer the new horse breeding and stallion law recently enacted by the Legislature of Pennsylvania.

THE HUMANE EQUINE OPERATING TABLE, manufactured by the Bradwood Manufacturing Company, of New Haven, Conn., is gradually working its way into the veterinary hospitals throughout the country. Within the past six months the following veterinarians have installed one of the heavy type in their operating rooms: Charles B. Banks, M. D. V., Memphis, Tenn.; Prof. M. H. McKillip, Chicago, Ill.; Dr. George T. Crowley, New Britain, Conn.; Dr. Herman H. Weinberg, Philadelphia, Pa.; and Dr. Andrew Darling, St. Louis, Mo.

MICHIGAN'S NEW LAW.

HOUSE ENROLLED ACT NO. 484.

An act to protect the title and to regulate the practice of veterinary medicine and surgery in all its various branches in the State of Michigan; providing for a State Veterinary Board and prescribing its duties; regulating existing practitioners; governing under graduates and reciprocity with other States and provinces; prescribing penalties for its violation and repealing all inconsistent acts.

The People of the State of Michigan enact:

Section 1. It shall be unlawful for any person to engage or attempt to engage in the practice of veterinary medicine or surgery in any of its various branches, unless he shall comply with the provisions of this act and be duly registered by the State Veterinary Board in the manner hereinafter provided.

Section 2. There shall be a State Veterinary Board, consisting of three members, who shall be residents of this State and citizens of the United States, and regularly registered veterinary graduates, no two of whom shall be graduates of the same college, and who shall have been in the practice of their profession at least three years prior to their appointment. The members of the State Veterinary Board, appointed under authority of act one hundred ninety-one of the Public Acts of eighteen hundred ninety-nine shall constitute the State Veterinary Board. The provisions of this act shall in nowise interfere with the tenure of office of the members of the State Veterinary Board heretofore appointed under authority of such act. Accordingly as vacancies shall occur on said Board, it shall be the duty of the Governor, on or before April first, annually, to appoint a veterinarian, having the qualifications herein prescribed, and who shall hold office for three years or until his successor is appointed and has qualified.

Section 3. The members of such Board shall meet at Lansing on the third Tuesday in August of each year. They shall organize by electing a president, secretary and treasurer. The treasurer shall give bonds in such amount as the said Board shall determine. It shall be the duty of the said Board to make an annual report to the Governor at the close of each fiscal year, which report shall contain a complete statement and record of all of the official acts of said Board, together with a statement of all moneys received and the manner of their disbursement. It shall be the duty of the said Board, from time to time, during each year, to provide and furnish to its secretary a list of the regular

colleges having a curriculum of at least three years and of at least three sessions of six months each, having the authority to confer the degree of doctor of veterinary medicine, doctor of veterinary science, or doctor of comparative medicine or veterinary surgeon. It shall be the duty of the secretary of said Board to issue to each applicant, graduates of said colleges, a temporary permit to practice until the next regular meeting of the Board, and to keep on file, in the office of the Secretary of State, his permanent address.

Section 4. Any person who has practiced veterinary medicine or surgery in their various branches in this State for five years prior to the passage of this act shall be eligible to become registered as an existing practitioner, and entitled to receive a certificate of registration from the State Board as such: Provided, That any such person shall, on or before the first day of January, nineteen hundred eight, file with the Secretary of State Veterinary Board an affidavit, showing that he has been continuously so engaged and shall also present letters of recommendation from ten reputable freeholders and stock raisers of this State, who shall have employed him, showing him to be qualified to practice veterinary medicine or surgery as above set forth. All those registered under this clause shall not be entitled to use any college degree or any abbreviation thereof. All veterinarians now registered under authority of act one hundred ninety-one of Public Acts of eighteen hundred ninety-nine, or entitled to be registered under said act, when registered shall be recognized and known as the Regular Veterinarians. It shall be unlawful for any person except a Regular Veterinarian under the provisions of this act, to use any college degree, or their abbreviations in connection with his name, or profession which might lead the public to believe that he has had a college course of veterinary training: Provided, That nothing in this act shall prevent any person from treating his own animal or assisting his neighbor.

Section 5. From and after January first, nineteen hundred eight, it shall be unlawful for any person to practice or attempt to practice veterinary medicine or surgery in any of its various branches, unless he shall be duly registered by the State Veterinary Board. No person shall be registered by the State Veterinary Board as a veterinarian or veterinary surgeon, until he shall have furnished satisfactory proof of his identity and that he is the lawful and regular possessor of a diploma from a regular veterinary college or veterinary department of a State institu-

tion of learning or college of medicine having a curriculum of at least three sessions of six months each, and requiring personal attendance of its pupils, and that said diploma was issued by such school or college direct to him: Provided, That the provisions of this section shall not be applicable to those persons who are duly registered veterinary surgeons at the time this act takes effect.

Section 6. It shall be unlawful for any person in this State to perform the following named surgical operations upon animals without first administering either local or general anæsthesia: The emasculation of hermaphrodites, the emasculation of mares and female dogs, the operation of fistulous wethers and pollevil, lithotomy and all forms of neurectomy, the Cæsarean operation, the operation for umbilical and scrotal hernia and the operation for wind broken horses called laryngio-crycorectomy: Provided, That the provisions of this section shall not be governing or apply to dehorning cattle, ordinary animal castration, accidental or minor surgery.

Section 7. It shall be the duty of the secretary of the State Veterinary Board to keep a book for the purpose of registering veterinary surgeons of this State. The said secretary shall collect a fee of five dollars for each person registered under the provisions of this act, except that all those persons coming within the provisions of section four shall be registered for, and the secretary shall collect but three dollars. The fees received by the said secretary shall be turned over by him at each session to the treasurer of said Board, who shall immediately, at the close of each session, pay same into the State Treasury to be covered into the general fund. It shall be the duty of the State Veterinary Board to purchase a supply of certificates of registration and to furnish a certificate to each applicant furnishing satisfactory proofs of his identity and qualifications, and upon payment of the fee, in the manner herein provided, which certificate must be conspicuously displayed in his office and shall entitle such applicant to practice veterinary medicine and surgery in all its various branches.

Section 8. The members of the State Veterinary Board shall not be entitled to receive any salary, fee, or compensation for their services as such members, except that the secretary shall receive such compensation as the Board shall determine, not to exceed fifty dollars per annum. The expenses of such members actually and necessarily incurred in the performance of official duties shall

be paid by the State Treasurer upon the warrant of the Auditor-General out of any money in the general fund not otherwise appropriated.

Section 9. Any student having attended a recognized veterinary college for six months may, upon the presentation of a certificate of attendance, bearing the college seal, be allowed to practice in the office of and under the instructions of any registered veterinary surgeon in this State to whom he may apply during one summer vacation, or until October following the date of his certificate of attendance and no longer, nor elsewhere as an under graduate.

Section 10. Michigan shall reciprocate with other States and provinces in an interstate recognition and exchange of licenses upon a basis of equality of educational standard and mutual recognition, which standard shall not be lower than required by the provisions of this act.

Section 11. Veterinarians living near the border line of Michigan, in an adjoining State or province, and wishing to practice in this State, shall, before doing so, apply to and receive from the State Veterinary Board a certificate of registration. The State Veterinary Board shall grant such license and issue a certificate upon the payment of the prescribed fees, provided the applicant's educational attainment shall conform to the requirements of the provisions of this act, and the said State or province shall grant a like reciprocity to veterinarians of this State.

Section 12. Any person violating any of the provisions of this act shall be deemed guilty of a misdemeanor, and shall, upon conviction, be punished for the first offense by a fine of not less than ten nor more than fifty dollars, and for each subsequent offense shall be punished by a fine of not less than twenty-five dollars nor more than one hundred dollars or be confined in the county jail for not less than thirty nor more than ninety days, or by both such fine and imprisonment in the discretion of the court.

Section 13. Complaints for a violation of this act shall be made to the prosecuting attorney or humane agent of the county in which the offense is committed and the method of procedure shall be the same as in other criminal cases.

Section 14. All acts or parts of acts inconsistent with or contravening the provisions of this act are hereby repealed.

This act is ordered to take immediate effect.

VETERINARY DEPARTMENT OF MICHIGAN AGRICULTURAL COLLEGE.

Through the untiring efforts of the Legislative Committee of the Michigan State Veterinary Medical Association, the following bill was enacted into law at the recent session of the Legislature, and while the college authorities are not limited as to the course to be given, the high character of the Michigan institution is a sufficient guarantee that it will be a department which will rank with the best of such schools:

HOUSE ENROLLED ACT NO. 213.

An act to provide for the establishment of a department of veterinary science at the Michigan Agricultural College.

The People of the State of Michigan enact:

Section 1. The State Board of Agriculture is hereby authorized and empowered to establish a department at the Michigan Agricultural College, to be known as the department of veterinary science.

Section 2. The said State Board of Agriculture may provide suitable accommodations for class and demonstrating rooms; may appoint such professors of veterinary science and such tutors, demonstrators and other instructors as may from time to time be necessary; may furnish all necessary apparatus and appliances for the study of veterinary science; may prescribe and regulate the course of study; may make such rules and regulations as may be necessary, and may grant to each student satisfactorily completing the described course of study a diploma and confer upon each student the degree of "Doctor of Veterinary Science."

GRADUATES OF THE NEW YORK STATE VETERINARY COLLEGE at the June examinations have gone to their new work in many directions. Dr. D. K. Eastman has engaged as assistant to Dr. Lester H. Howard, of Boston; Dr. Cassius Way associates himself with the practice of Dr. George H. Berns, of Brooklyn, while Dr. Walter E. Frink assumes an assistantship with Dr. W. J. McKinney, also of Brooklyn. Several are on the eligible list for the Philippine service, and others for the Bureau of Animal Industry.

CORRESPONDENCE.

IS THE VETERINARY PROFESSION DEPENDENT UPON THE HORSE?

UTICA, N. Y., May 25, 1907.

Editors American Veterinary Review:

DEAR SIRs:—The above title suggests a serious crisis that our profession is facing, due to the advanced methods of transportation.

The question of to-day is how to do a thing or go a distance the quickest; anything so as to get results in a hurry.

This is an age of keen competition and it's the individual or firm that "delivers the goods" the quickest that gets the business.

Business extends not only across the continent, but across the oceans, and firms and even small individual business concerns think little of importing or exporting goods.

Suburban homes and the getting out of the heat, strife and expense of city living is booming the suburban towns and therefore yearly—yes, daily—increasing the demand for quick transportation to and from.

Trolley and steam roads are extending all over the country, opening up secluded spots and directly connecting the suburban and rural districts with the cities. Consequently the city commercial houses cater for this trade, extend their delivery service and necessarily demand methods of quick and cheap transportation for their goods.

The wealthy wish to travel overland and also to enjoy the advantage of rapid transport, so as to cover a vast territory quickly and at minimum cost.

The general public are obliged to travel considerable distances to get to their places of employment, and in order to live in any kind of enjoyment of fresh air and home-like surroundings must go far beyond the hustle and bustle of the center of a large city.

The products of our farms are being shipped almost inconceivable distances and held in cold storage until distributed to the consumer, consequently a demand for very quick transportation.

The professional man jumps on a train or car and goes ten, fifteen or twenty miles to make a call and thinks nothing of it,

and does it as quickly now as a few years ago it would take to go four or five miles, consequently an ever increasing demand for quick transportation.

Then, also, we must consider that this is a speed-crazed age, the good old-fashioned methods of giving satisfaction and quality is giving way to imitation and fake, with haste in selling and delivering. In years gone by, and to some extent in my time, first we had the horse solely as a means of covering long distances. Distances that looked long in those days would be looked upon now as extremely insignificant journeys. Then came steam, next the trolley, then the individual's car, or "special train," the automobile. The advent of the steam road created a cry that the horse was doomed to partial extinction, as the stage lines would be abolished, and at the present they are practically all gone. Then came the trolley car or the electrically propelled train, and then another still louder yell went up that now surely the horse was a goner, as all horse cars would be done away with, that the trolley would cover such territories, as it has, consequently the breeding of horses would cease to be a profitable branch of agriculture. Then next came the improved velocipede, or the results of its wonderful evolution into the bicycle, and the bicycle industry developed to such magnitude that many places sprung up all over the country. The output for years was far below the demand, and when they could be supplied in sufficient numbers all the world was awheel—father, mother, sister, brother and all the rest of the family were the proud possessors of wheels. The trolley, steam road, horse and all means of transport were neglected for the fascinating wheel, particularly the horse for pleasure. Even commercially different forms of man-propelled vehicles were put on the market. Then came a gradual decline of the entire business until the bicycle has taken a useful place in the commercial world.

During this bicycle craze the yell went up again that the horse was to be replaced, especially in the cities. Then the advent of the self-propelled vehicle, or automobile. When this invention was perfected the old cry, only in a more aggravated form, was heard, and this time it was more universal. Even the horsemen to a certain extent conceded that at last the horse had met with a mechanical competitor that would cause his complete replacement or displacement. The press took up the subject and papers that had always been firm adherents of the horse went back on him and considered his cause lost.

Now, to what extent does the veterinary profession depend upon the horse? In my opinion, all depends on him, our chief patient. The very life of the profession, in my opinion, depends upon him, for as the very foundation, its literature, its colleges and financial sustenance depended and depends at present upon this animal.

Practitioners may become enthusiastic upon scientific questions, meat and milk inspection, the eradication of contagious and infectious diseases, upon improvement of medical treatment, the writing of text-books, the improvement of the milk supply, the publication of periodicals of veterinary interest and various other interesting branches of veterinary science, still they mostly all depend upon the horse to get the financial necessity to live and devote time and money to such questions. Retired veterinarians who take up special lines have generally acquired their means of living through the horse, the colleges depend for clinical material and hospital teaching upon him, in the teaching of anatomy, physiology, materia medica, etc., the horse is used as the type and the diseases of other animals are rather comparative. I mentioned that the very foundation of veterinary science depended or had its origin through interest in this animal. To illustrate this statement I will cite such facts as follow: First, take a definition of veterinary science. Veterinary science comprises a knowledge of the conformation and structure of all the domesticated animals, especially the horse, their physiology and special, racial and individual characteristics, their human management and utilization, their protection from, and medical and surgical treatment in, the diseases and injuries to which they are exposed, their amelioration and improvement, their relation to the human family with regard to communicable disorders, and the supply of food and other products, more particularly those derived from them for the use of mankind. From the third century onward veterinary science had a literature of its own and regular practitioners, especially in the service of the Roman armies. Apsyrtus, of Bethynia, in 322 B. C. enjoyed a high and well-known reputation. He wrote on the contagious nature of many diseases. He also studied and described accidents of the horse. Then came Herrocles, Apsyrtus' successor, especially on hygiene and treatment of horses. Publeus Vegeteus is said to have been more of a horse dealer than a veterinary practitioner. He introduced several operations on the horse, such as the removal of calculi from the bladder through the rectum, couching

for cataract, extirpation of certain glands and several serious operations on the horse's foot. Toward the close of the mediæval period the subject of veterinary art was much cultivated in the cavalry schools of Italy. Spain also had an organized system of good practitioners. In the fifteenth century among the Celts the healer of horse diseases and the shoer were held in high esteem and the court farriers were very well considered. The earliest known English works were on the horse, as "Properties and Medcynes for a Horse, Mascal of Oxen, Horses, Sheeps, Hogges and Dogges." Henry VIII. brought from Italy farriers and riding masters. English books of the seventeenth century show much improvement in veterinary medicine and surgery, especially as regards the horse. This is more marked in the eighteenth century, as such writings as "The Farriers' New Guide," "Method of Dieting Horses," "New Treatise on the Diseases of Horses," all by Gibson; "The Anatomy of an Horse," by Snape, farrier to Charles II; also "Anatomy of the Horse," by Stubbs; also writings by Solleysel (1664) were principally of the horse. Probably all, but especially the schools of France and Germany, were established to train veterinarians for the army as well as civil life, consequently the horse was the principal animal considered. So the very schools were founded on account of the interest taken in the horse, and other animals were of secondary importance. St. Bel established the first school in England and stabling for fifty horses and a forge were established at St. Pancras. In the early years of the Royal Veterinary College the horse was the only animal to which much attention was given. In America the progress of veterinary science has entirely depended upon the horse. All of our colleges have been devoted almost entirely to teaching about the horse; cattle, dogs and other domesticated animals were and are considered in a secondary manner. At present there is a tendency to educate along such lines as meat and milk inspection, sanitary methods, cattle diseases, etc., but is there enough of this to support our profession and keep our schools agoing? Without the interest taken in general practice by the young men will we get matriculants for the colleges, as it is the student sent by the general practitioner that keeps up the respective colleges, as each alumnus of a school favors and helps along his *alma mater*? Without the general practitioner will the American State and the various county societies be kept up? Who will support them? Will interest last and remain up to a progressive pitch depending on strictly scientific lines without the enthusiasm

of the man in general practice? Will we get young men to enter our schools and study veterinary medicine with the preliminary educational requirements as high as they are and only have the Army, Department of Agriculture, a few positions at experiment stations and municipal meat and milk inspection, with the accompanying pay, as, for instance, the B. of A. I.? Consider the insignificant remuneration that a position as assistant inspector pays when we consider the accompanying expenses, or consider the Army, rank and pay. Municipal meat inspector is still worse. Now, what inducements can the veterinary profession offer a young man outside of horse practice that will attract the young men and furnish means to enable them to earn a living and allow of putting away enough to make investments along other lines or to bank. In my opinion, without horse practice our profession faces extinction as an individual profession and will become but a branch of the science of agriculture. You read on every hand that the self-propelled vehicle never will lessen the number of horses used in the cities. It is not a question of the future; it is one of the present. They have and are cutting into the field of usefulness of the horse, at present not to a very serious extent, but still enough to cause city dependents upon the horse to worry and become pessimistic. I do not wish to convey the idea that the auto-wagon will entirely replace the horse. That is not the question; but will it displace a large enough number from the cities to cut down the revenue of the veterinarians and bring the general veterinary practitioners down to the financial level of a veterinarian in the employ of the Government? If so, then we will cease to get men in the colleges, and consequently the doors of the same will close. We will cease to get the financial aid for the societies and in turn legislation will not be protected and our present restrictive laws will be wiped from the statute books and charlatanism will reign again. To sum up, it is my opinion that the profession is directly dependent upon the general practitioners, and in turn the general practitioners are dependent entirely upon the horse.

Very truly yours,

W. A. YOUNG, D. V. S.

THE VETERINARY CORRESPONDENCE SCHOOLS.

BATAVIA, N. Y., July 4, 1907.

Editors American Veterinary Review:

DEAR SIRs:—On page 457 of the REVIEW, just received, I notice a short article entitled "Feeding the Dupes," and which

goes on in a small way to show up some of the damnable methods of this fake concern. It is most gratifying indeed to know that we have such a grand monthly reminder as the REVIEW, for in its rich pages, we find much not only to instruct in but to assist us by words of cheer and encouragement.

In speaking of this fake concern, which is located in London, Ont., I wish to offer just a suggestion, not only of this one particular concern, but all of its kind.

One can hardly pick up an agricultural paper but what he will find one or more notices advertising some of these fake correspondence veterinary schools, offering all kinds of inducements to young men to become *qualified* veterinary surgeons, thereby fitting themselves for the different government positions, etc.

Now, the suggestion is this: Let every practitioner who should see one of these fake schools advertised, take upon himself the responsibility of making himself a committee of one, to communicate with the editor of this particular farm journal, calling his attention to the fact of its dishonest methods, and by so doing we will in the majority of cases be the means of having such fake advertisements weeded out, and in this way we will assist in the advancement of our chosen profession.

As an illustration, I will mention an instance, which came under my observation some time ago. I had noticed in the columns of a farm journal called *The Farm and Fireside*, an advertisement of the Ontario Veterinary Correspondence Institute of London, Ont., setting forth all its advantages, etc., etc. I decided, as I have above suggested, of making a committee of myself to get into correspondence with the publishers of this paper and to endeavor to find out if they catered to this sort of advertising, and also, if possible, to endeavor to have this particular one stricken from its pages. The reply I received from this journal was most gratifying indeed. They not only stated that they wished, in fact it was their aim, to publish only such advertisements as were commendable and clean and that they had discontinued the advertisement, and very courteously thanked me for calling their attention to the facts.

The fact that this paper, which has a very large circulation, dropped this advertisement like a "hot coal," so to speak, goes a good way to show to the veterinary profession and its followers that *The Farm and Fireside* stands ready and willing to assist them in their efforts for a higher standard of education and also

stands ready to assist in stamping out fakeism and quacking in all its forms.

So, I wish to repeat to my brother practitioners to *get busy* and stop this kind of advertising. We can do it if we only will devote just a little time with the pen.

Very respectfully, N. N. LEFLER, D. V. S.

THE PATHOLOGY OF LAMINITIS.

TORONTO, CANADA, June 12, 1907.

Editors American Veterinary Review:

DEAR SIRs:—The pathology of laminitis as is now generally accepted, in Canada at least, has always from a physiological standpoint appeared to me to be not quite definite enough, and careful study has supplied me with some data on which my theory rests. I am now speaking of laminitis caused by an over-feed of unsuitable fodder, or which might be called dietetic causes, the laminitis caused by concussion or over-driving being comparatively easy to account for.

Data.—(1) By experiments performed on living animals, chiefly the dog, it has been established that moderate stimulation of the splanchnic nerves and solar plexus results in hyperæmia of the mesenteric blood vessels, but that over-stimulation results in anæmia of the aforesaid vessels and active hyperæmia of the peripheral circulation (*i. e.*, the skin, extremities, etc.)

(2) Also that in the dog, at least, over-stimulation of the above nerves causes a rise of temperature and throbbing and engorgement of blood vessels of the feet.

I may say that I was privileged to see the above experiments performed on an anæsthetized dog, the stimulus used being the electrical.

(3) That the foot, horny box, sensitive structures, blood vessels, etc., are part and parcel of the skin, corresponding respectively to the epidermis and dermis.

These facts being established, supposition commences, but it seems reasonable to conjecture, that the excessive amount of, or unsuitability of, the ingested foodstuffs might cause (after preliminary hyperæmia of the mesenteric vessels, as shown by the rigors ushering in an impending attack) over-stimulation of the splanchnics with consequent hyperæmia of the peripheral circulation, in which the blood vessels of the feet would be included. It

is also fair to suppose that from their dependent position, the vessels of the feet would suffer most and would take longer to regain their normal tone, thus establishing active congestion, which is the first step of inflammation, as we all know.

Very truly yours, C. G. SAUNDERS, V. S.

COLLEGE COMMENCEMENTS.

NEW YORK STATE VETERINARY COLLEGE.

At the graduating exercises of this college, which took place in connection with the other schools of Cornell University in June, the following gentlemen were awarded the degree of D. V. M. (Doctor of Veterinary Medicine): John Robert Burns, Ithaca; George Rowley Chase, Warsaw; William Lowellyn Clark, Ithaca; Fred Everett Cleaver, Odessa; Walter Kingman Cogswell, Etna; Robert Neil Gordon Darby, Fort Plain; John Bragg Drew, Ithaca; D. K. Eastman, Woodsville, N. H.; Charles Rudd Eno, Pine Plains; James Nathan Frost, North Evans; Walter E. Frink, De Ruyter; Walter Levi Gilbert, Durham; Arthur Thomas Gilyard, Seymour, Conn.; Bradford Hyatt, Ithaca; Arthur Raymond Keith, Oakland, Cal.; Ralph Floyd Knight, Mathias; Watson Lewis, Ithaca; Walter Gould Morehouse, Briarcliffe, Mass.; William Seymour Newman, Ithaca; Joseph Vit Prucha, Cleveland, Ohio; Vaughn Wisley Rood, Etna; Vern Adolphus Sharp, Ithaca; Thomas Sheldon, Poughkeepsie; Charles Goff Thompson, Little Falls; Harris Baker Tillou, Elma Center; Clarence Adelbert Town, Syracuse; James Garfield Wallace, Batavia; Robert Eugene Watkins, Ithaca; Cassius Way, B. Agr., A. B., Giliad, Conn.; Byron McNeil Weller, Geneseo; Frederick Cornelius Willson, Ithaca; Frederick William Wood, Berkeley, Cal.

The H. K. White prizes in veterinary science were awarded as follows: First prize, to Vaughn Wesley Rood; second prize, to Harris Baker Tillou.

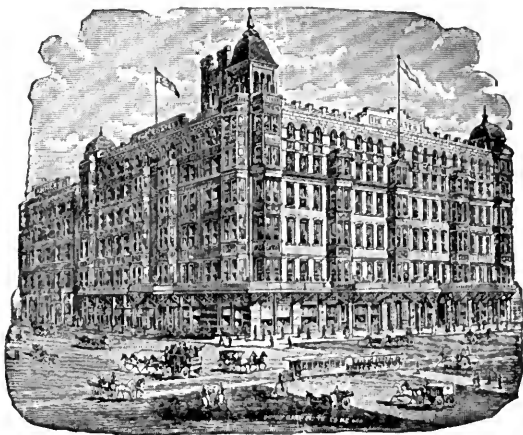
"I FIND some grand points and thoughts from a practical standpoint in the REVIEW, and wish you every success."—(A. N. Lawton, V. S., Broadhead, Wis.)

SOCIETY MEETINGS.

AMERICAN VETERINARY MEDICAL ASSOCIATION.

FORTY-FOURTH ANNUAL MEETING AT KANSAS CITY, MO., SEPTEMBER 10, 11, 12, 13, 1907.

Headquarters.—Coates House, Eleventh Street and Broadway. (European plan, \$1 and up per day; American plan, \$2.50 and up.)



HEADQUARTERS OF A. V. M. A., COATES HOUSE, ELEVENTH STREET AND BROADWAY.

Other Hotels.—The Baltimore, Eleventh and Baltimore, four blocks from meeting place (European plan, \$1.50 and up); The Sexton, 15 West Twelfth street, four blocks from meeting place (European plan, \$1 and up); Hotel Washington, Twelfth and Washington, three blocks (European, \$1 to \$2); The Century, 306 West Twelfth (European, \$1 and up); The Savoy, corner Ninth and Central, two blocks (European, \$1 and up); The Brunswick, Eleventh and Broadway, one block (American, \$2 and up); Hotel Convention, Twelfth and Broadway, two blocks (American, \$1.25 to \$1.50); Hotel Windsor, Eleventh and Wyandotte, two blocks (European, 75 cents and up). The Local Committee will have a list of smaller hotels and boarding-houses

in the vicinity of the meeting place in which accommodations may be had if desired. Reservations should be made in advance by writing to the hotels, which will send diagrams with prices, or by writing to Dr. S. Stewart, 1330 East Fifteenth street, K. C., who will give each request prompt attention.

Place of Meeting.—The sessions will be held at the New Casino, 1023 Broadway, in the same block with the hotel headquarters. Take Observation Park Car (surface line) at Union Depot, for the meeting place and headquarters.

OFFICERS AND COMMITTEES, 1906-07.

President—James Law, New York.

Vice-President—J. G. Rutherford, Canada.

Vice-President—Louis A. Merillat, Illinois.

Vice-President—W. T. Monsarrat, Hawaii.

Vice-President—E. B. Ackerman, New York.

Vice-President—Hans Jensen, Nebraska.

Secretary—Richard P. Lyman, Connecticut.

Treasurer—George R. White, Tennessee.

Librarian—W. L. Williams, New York.

Executive Committee—The officers *ex officio* and W. H. Dalrymple, Louisiana (chairman); M. H. Reynolds, Minnesota; Roscoe R. Bell, New York; S. Brenton, Michigan; W. L. Williams, New York.

Finance—Thomas Bland, Connecticut (chairman); C. E. Cotton, Minnesota; Robert W. Ellis, New York.

Publication—C. J. Marshall, Pennsylvania (chairman); A. M. Farrington, District of Columbia; E. M. Ranck, Mississippi; J. B. Paige, Massachusetts; R. P. Lyman, Connecticut.

Intelligence and Education—Leonard Pearson, Pennsylvania (chairman); D. Arthur Hughes, Illinois; M. H. Reynolds, Minnesota; George R. White, Tennessee; Adolph Eichhorn, District of Columbia.

Diseases—V. A. Moore, New York (chairman); A. D. Melvin, District of Columbia; L. A. Merillat, Illinois; C. H. Higgins, Canada; J. R. Mohler, District of Columbia.

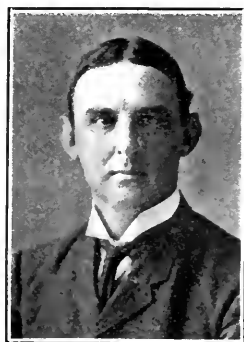
Resolutions—S. Stewart, Missouri (chairman); A. Peters, Massachusetts; J. L. Robertson, New York; W. H. Lowe, New Jersey; M. E. Knowles, Montana.



VICE-PRES. E. B. ACKERMAN.



VICE-PRES. L. A. MERILLAT.



VICE-PRES. W. T. MONSARRAT.



VICE-PRES. H. JENSEN.



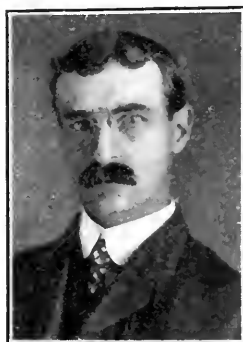
PRESIDENT JAMES LAW.



VICE-PRES. J. G. RUTHERFORD.



TREASURER G. R. WHITE.



SECRETARY R. P. LYMAN.



LIBRARIAN W. L. WILLIAMS.



Necrology—George H. Berns, New York (chairman); A. H. Baker, Illinois; Wm. Dougherty, Maryland; E. L. Quitman, Illinois; J. E. Ryder, New York.

Army Legislation—J. P. Turner, District of Columbia (chairman); T. Earle Budd, New Jersey; A. S. Cooley, Ohio; J. H. McNeil, Iowa; W. H. Kelly, New York.

Association of Faculties—Charles E. Cotton, Minnesota (chairman); George H. Berns, New York; John J. Repp, District of Columbia.

Local Committee of Arrangements—S. Stewart (chairman), H. B. Adair, L. R. Baker, F. F. Brown, B. F. Kaupp, A. T. Kinsley, R. C. Moore, G. B. Nicholas, C. J. Sihler, A. Trickett.

MEAT INSPECTION AND SPECIAL EXHIBITS.

Readers will note that the morning of Thursday, Sept. 12, will be devoted to a visit to the Armour Packing Plant. Members of the Association, also ladies and visitors, are invited by the Company to a tour of the establishment to witness the process of handling, curing and preparing meat and meat products. Every facility will be afforded throughout the various departments for scrutinizing the methods and sanitary conditions under which the products are made ready for market.

The Armour Company have arranged to serve a luncheon to their guests in their commodious Office Building during the noon hour.

Through the efforts of the Local Committee, Dr. Louis R. Baker, Chief of the U. S. Inspection Force at Kansas City, will have charge of a collection and display of an extensive exhibit of pathological specimens obtained in the routine of Federal inspection. This display, on exhibition at the Armour Plant, will provide an excellent opportunity to become familiar with both the rare and common lesions of disease in food-producing animals.

PRELIMINARY MEETINGS.

Monday, Sept. 9.—10 A. M., Missouri Valley Veterinary Association; 10 A. M., Missouri State Association; 2 P. M., Executive Committee; 4 P. M., Publication Committee; 8 P. M., Association of College Faculties and Examining Boards.

PROGRAM.

First Day, Tuesday, Sept. 10, 1907.

8.00 A. M.—Meeting of Executive Committee.

10.00 A. M.—Address of welcome, Hon. Henry M. Beardsley,
Mayor of Kansas City.

Response to address of welcome.

President Law's address.

Roll call.

Submission of minutes of previous meeting as presented in annual report and in the records kept by the Secretary.

Unfinished business.

Report of Executive Committee.

Admission of new members.

Reports of regular committees: Intelligence and Education (to include an outline of the status of the veterinary colleges and the discussion by Dr. D. Arthur Hughes of what the several States are doing for the furtherance of veterinary intelligence and education; Diseases (short committee report and individual reports as follows: "Some Principles of the Newer Pathology in Their Application to the Control of Disease," V. A. Moore; "Dermal Mycosis in Horses," A. D. Melvin and J. R. Mohler; "The Disposal of Horses Affected With Occult Glanders," L. A. Merillat); Finance; Publication; Local Arrangements; Necrology; Resolutions.

12.00 M.—Adjournment.

2.00 P. M.—Association reassembles.

Reports of special committees (Army Legislation, Association Seal).

Report of Secretary.

Report of Treasurer.

Report of Resident Secretaries.

Discussion of Reports.

Election of Officers.

5.00 P. M.—Adjournment.

8.00 P. M.—Reception to all members and visitors at the New Casino.



GOVERNMENT RETAINING ROOM FOR SPECIAL EXAMINATION OF THE CARCASSES OF SWINE. IT HAS CEMENT WALLS AND FLOORS WITH APPLIANCES FOR PERFECT DISINFECTION OF ROOM, ALSO INSTRUMENTS USED.



Second Day, Wednesday, Sept. 11, 1907.

8.00 A. M.—Executive Committee.

10.00 A. M.—Association assemblies.
Reports of committees.

PAPERS AND DISCUSSIONS.

1. "Intestinal Obstructions of the Horse"—A. H. Baker, Chicago, Ill.

2. "Rabies as Expressed in the Recent Connecticut Epidemic"—G. W. Loveland, Torrington, Conn.

3. "John Smith and His Misfortunes"—A. Liautard, Paris, France.

4. "The A. V. M. A. as an Educator"—E. M. Ranck, Natchez, Miss.

5. "The Place of Veterinary Medicine in State Education"—D. Arthur Hughes, Chicago, Ill.

6. "Observations on Veterinary Education and Practice in Europe"—P. A. Fish, Ithaca, N. Y.

7. "The Effect of the Tuberculin Test Upon Lactation"—S. H. Gilliland and E. L. Cornman, Marietta, Pa.

8. "Reminiscences of Bovine Tuberculosis in Massachusetts"—J. F. Winchester, Lawrence, Mass.

9. "Tuberculous Infection Through the Alimentary Canal"—John Reichel and M. P. Ravenel, Philadelphia, Pa.

10. "Preventive Medicine as Applied in the Army"—L. E. Willyoung, officially representing the U. S. Army, Fort Sill, Okla.

11. "The Veterinarian and the National Guards"—T. Earle Budd, Orange, N. J.

12. "Anthrax Vaccines"—R. R. Dinwiddie, Fayetteville, Ark.

13. "The Agglutinating and Precipitating Powers of Glandered and Non-Glandered Blood Serum in Diagnosis"—Walter J. Taylor, Ithaca, N. Y.

14. "Infectious Ulcerations of the Lips and Legs of Sheep"—M. E. Knowles, Helena, Mont.

5.00 P. M.—Adjournment.

8.00 P. M.—Association reassembles.

Reports of Committees.

15. "Tumors"—A. T. Kinsley, Kansas City, Mo.

16. "Municipal Milk Inspection in the South"—C. A. Cary and Ward Giltner, Auburn, Ala.

17. "Milk as Affected by Stable Practices and Subsequent Exposures"—M. H. Reynolds, St. Anthony Park, Minn.

18. "Stable Ventilation from a Clinical Standpoint"—G. A. Johnson, Sioux City, Iowa.

10.00 P. M.—Adjournment.

Third Day, Thursday, Sept. 12, 1907.

9.30 A. M.—Members and visitors (including ladies) visit the Armour Packing Plant.

12.00 Noon.—Luncheon at the Plant.

2.00 P. M.—Association reassembles.

Reports of Committees.

19. "Pertaining to Meat Inspection"—John R. Mohler, Washington, D. C.

20. "Sentiment as a Factor in Meat Inspection"—S. Stewart, Kansas City, Mo.

21. "My Experiences In and With the U. S. Bureau of Animal Industry"—Richard Ebbitt, Grand Island, Neb.

22. "Notes on the Surgical Relief of Roaring"—W. L. Williams, Ithaca, N. Y.

23. "Practical and Applied Surgery"—C. C. Lyford, Minneapolis, Minn.

24. (Subject to be announced)—J. A. Couture, Quebec, Canada.

10.00 P. M.—Adjournment.

Fourth Day, Friday, Sept. 13, 1907.

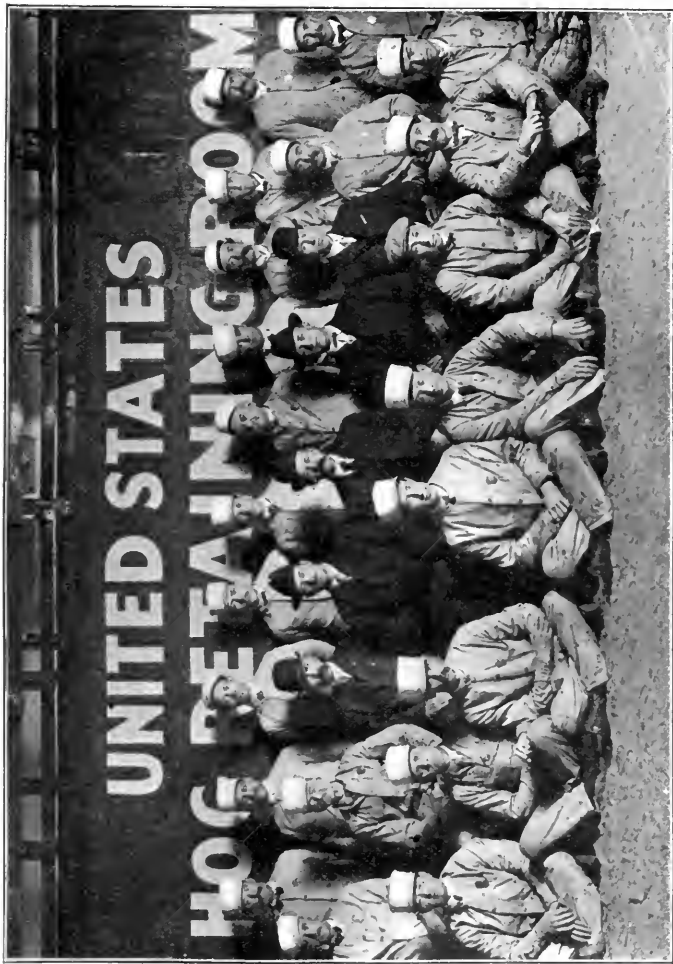
9.00 A.M.—Clinic at the Kansas City Veterinary College Amphitheatre, 1336 East Fifteenth street.

Quite a variety of operations are being arranged for, among which may be mentioned: Resection of the Plantar Aponeurosis, resection of the lateral cartilage, stringhalt operation, bog spavin, oöphorectomy of cattle, dental operations, and many of daily practical utility.

The following well-known surgeons have consented to operate, or their acceptances are daily expected by the committee: Drs. W. L. Williams and George H. Berns, New York; George R. White, Tennessee; L. A. Merillat, Illinois; T. Bent Cotton, Ohio; C. C. Lyford and Charles E. Cotton, Minnesota; J. S. Anderson and Peter Simonson, Nebraska; J. H. McNeil, Iowa, and others.

12.00 Noon.—Luncheon at the College (ladies included).

1.30 P. M.—Clinic continued.



GROUP OF FEDERAL OFFICERS ON DUTY AT THE PLANT OF THE ARMOUR PACKING COMPANY, KANSAS CITY, MO.



PROPOSED AMENDMENTS TO BY-LAWS.

There are offered three amendments to the By-Laws that will come up for consideration during this meeting.

To amend Section 1, Article V., by adding the words "Committee on Legislation," these to be placed between lines six and seven of said section. (Signed) W. HERBERT LOWE.

To amend Section 2, Article V., by adding a new section between the present sections 3 and 4, this to read as follows: "It shall be the duty of the Committee on Legislation to use its best efforts to secure the enactment or defeat of such legislation as the Association directs, and as ordered by the President." Signed W. HERBERT LOWE. (Note: This changes the special Committee on Army Legislation to a Committee on General Legislation.)

To amend Section 2, Article VI., by changing the last clause to read as follows: "The provisions shall include the graduates of former two-year schools that have maintained the three-year course for the last five years." Signed W. H. DALRYMPLE and G. R. WHITE.

SOCIAL FEATURES.

The Local Committee has endeavored to arrange an entertainment for the social enjoyment of visitors and friends as well as for recreation for the members. The following has been outlined to occupy the days of convention week.

Tuesday—2 P. M., ladies' carriage drive to points of interest. 8 P. M., reception at the New Casino, 1023 Broadway, to all members and visitors.

Wednesday—10.30 A. M., ladies tour the shopping districts. 2 P. M., trolley party for ladies and families of members. 8 P. M., ladies take a trip to Electric Park, or attend evening session.

Thursday—9.30 A. M., members and visitors (including ladies) are invited to visit the Armour Packing Plant. This excursion will occupy the place of the morning session and will furnish a few hours of relaxation and recreation. 12 Noon, luncheon will be served in the offices of the Armour Plant as guests of the Company. 2 P. M., ladies' theatre party. 8 P. M., Annual Association Banquet.

Friday—10 A. M., ladies' carriage drive, arriving at the Kansas City Veterinary College for a luncheon at 12 Noon. 2 P. M., bird's-eye view of Kansas City. 8 P. M., an evening at Electric Park.

Saturday—9 A. M., a trolley trip to Fort Leavenworth or seeing the city by tally-ho or carriage.

THE TRIP TO KANSAS CITY.

In order that those contemplating the trip to Kansas City may have the rare opportunity of journeying together, so adding materially to the enjoyment of the annual outing, special schedules have been compiled as to include two large sections of the country. Itineraries have been compiled by Secretary Lyman embracing, first, that section north of and including Pennsylvania, west to Chicago, and, second, including the territory from Minnesota to Missouri. These itineraries will be published in the official program, and may be obtained upon application to the Secretary.

Secretary Lyman has the following to say regarding the routes: "After carefully considering the various routes, and at-



KANSAS CITY VETERINARY COLLEGE.

tempting to more fully meet the needs of the majority, it is suggested that members and visitors from Eastern points use the New York Central lines to Chicago and thence on to Kansas City via the route suggested by the veterinarians of Chicago, viz., C., M. & St. Paul Railway. The appended schedule enables all to arrive in Chicago in season to travel onward with the Chicago delegation. Tickets should be purchased from starting points through to Kansas City, via Chicago, and thence over the C., M. & St. Paul R. R. By adopting this plan the transfer of baggage

and sleeping car accommodations in the train leaving Union Station, Chicago, at 6 P. M., Monday, Sept. 9, can be arranged for by corresponding with Dr. A. H. Baker, 2537 State Street, Chicago, the latter having kindly offered to take charge. It is hoped that many will avail themselves of this arrangement and insure its success. *Come and tell others to do so.*"

CALIFORNIA STATE VETERINARY MEDICAL ASSOCIATION.

The meeting was called to order at the Key Routs Inn, Oakland, by President Browning, June 12, at 2.30 P. M. There were nineteen members and three visitors present.

As the Secretary was not present, the roll call and the reading of the minutes of the previous meeting were dispensed with and Dr. C. M. Haring was appointed Secretary *pro tempore*.

The President called for the report of the Committee of Examiners of the Society.

Dr. H. Spencer stated that as the Secretary was absent and as the Board had been unable to meet, no report was ready.

Dr. Archibald: The Society should have a different system for application for membership. There is much confusion in handling applications by the Board of Examiners. Applications, according to the by-laws, should be reported at the first meeting following the date on which they are made.

Dr. H. Spencer: The trouble is not the fault of the Board of Examiners or the way the books are kept, but is due to the absence of the Secretary of the Society.

Dr. Archibald: It is up to the Board of Examiners to report on applications. The presence of the Secretary is not necessary. They neglect to report and a large number of members are kept out of the Society or are for a long time on the waiting list.

President Browning suggested that duplicate applications be sent to the various members.

Dr. Archibald said that was the Secretary's duty. He suggested that the chairman instruct the Board of Examiners (those members who are present) to hold an immediate session and report.

A five-minute recess was declared.

The Committee of Examiners reported favorably on the membership application of Dr. J. A. Hill, of Alameda. A motion was made and carried that the report be adopted.

Next in order was the report of the Judiciary Committee. Dr. Browning explained that no committee had been appointed because he had been waiting for the passage of the new law regulating the practice of veterinary medicine. He stated that he had selected the committee and would announce it later on in the meeting.

Admission of New Members—The Society went into an executive session and Dr. A. J. Hill, of Alameda, was unanimously elected a member of the Society.

Reading of Papers—

A CASE OF HODGKIN'S DISEASE IN THE HORSE.

By THOMAS W. HEALEY, M. D. C., San Jose, Cal.

"Some months since I was consulted by a client with reference to a thoroughbred mare of considerable notoriety, who had developed a rather large tumefaction in the anterior pectoral region. As described by the gentleman, the condition had steadily increased in size from its first inception, which had been manifest about a month prior to this consultation. The owner was a Southern gentleman, who at one time was thought to possess a very enviable reputation as a veterinarian, although unqualified. After trying various medicinal preparations with unsatisfactory results, he gave the matter up, acknowledging that the pathological conditions were too obscure for his detection.

"The patient being in a remote district of the county, and after hearing the history of the case, with such details as he was enabled to relate, I concluded that it was a common case of pre-pectoral pyogenic infection, or, vulgarly, 'swell breast,' which is quite prevalent in this section. I therefore recommended that the enlargement be blistered, and upon the first indication of a determination of pus that the same be freely liberated. Two weeks later I was notified that the tumefaction was larger and harder, but neither feverish nor painful to manipulation. This feature being rather of a surprise to me I determined to visit the patient myself. I found her to be a remarkably fine type of the thoroughbred strain. She was in somewhat of a debilitated condition, about nine years of age, and weighed 950 pounds. Examination revealed an enormous hard, non-inflammatory, painless tumefaction in the anterior pectoral region. It was hyperplastic in its nature, of a rather uniform outline. The temperature was normal, pulse about 50, respiration a trifle rapid, visible mucous membranes inclined to be pale, the appetite was good, the bowels were regular. On compelling the patient to move she exhibited

a peculiar awkwardness of gait, due evidently to the immense swelling of the anterior pectorals, which I now determined to explore in hopes of finding pus, notwithstanding its non-inflammatory condition and the absence of thermic systemic derangement. After proper preparation of the skin I proceeded to incise the tumor, continuing down through its thickened wall for at least ten inches without the slightest manifestation of pain from the patient, but beyond this distance she flinched very perceptibly.

A careful search for a pyogenic center or the location of pus in any quantity was unsuccessful. I now determined that this immense hyperplasia must be due to another cause than that of a pyogenic focus, and directing my examination along the chains of such lymphatic glands as could be palpated I discovered that several of them were somewhat enlarged, and this was especially true of the submaxillary, which, the owner informed me, was the first manifestation of disorder that had attracted his attention. Upon auscultation and palpation of the thoracic region I found slight evidence of hydrothorax, but not to an alarming extent.

"I prescribed iodide of potassium and liquor potassii arsenitis, to be given alternate weeks. Two weeks later I learned that the patient was in every way worse, being very weak and manifesting marked dyspnœa, but it was not until another week had passed that I saw her again, and then her symptoms were extreme weakness, difficult breathing, accompanied by great dilatation of the nostrils and heavy heaving of the flanks. An examination of the thorax revealed that cavity to be at least three-quarters full of fluid, forcing the lungs upward. The temperature I found to be 102° F., pulse 74, rather small and rapid. The appetite, however, continued good and the bowels regular. The eyes were rather prominent, very clear, and their mucous membranes of a yellowish white. There was no œdema of the inferior pectoral region or of the dependent part of the abdomen. The enlarged breast presented the same characteristics that had prevailed from the first. The submaxillary lymphatic glands and the superficial and deep inguinals had apparently increased in substance. She was steadily losing flesh, notwithstanding her keen appetite and the most nourishing food. Up to this time I had hesitated to give my diagnosis, but I now told the owner what I considered to be the ailment, and also gave an unfavorable prognosis. My diagnosis was *lymphadenoma*, or *Hodgkin's disease*. I recommended the destruction of the animal to save

further unnecessary suffering, which met with the owner's hearty approval. I did not attempt thoracentesis, for I was satisfied no good could be accomplished by it and great prostration and probably immediate death would follow, leaving a reflection that under all such circumstances is, to say the least, unpleasant.

"Destruction and post-mortem was held the day following. When the shoulder and ribs were removed there was presented a very interesting sight. The thoracic cavity was two-thirds full of a pale reddish serum, the lungs being only about one-half their normal size. One-half of each lung had been submerged so long that these sections were completely collapsed and adaelectatic. The pleural walls were much thickened and presented numerous growths of adenoid proliferations, the pericardium was about one inch thick, the heart was quite normal in appearance, the prepectoral lymphatic glands enormously enlarged, and each chain was quite symmetrical throughout their entire length, extending almost to the heart, with an abundance of hyperplastic tissue around them. Each gland was about 6 inches in diameter and 15 inches in length. They were very white and very dense in texture. The region about the glands presented enormous proliferations of white fibrous tissue, leaving but little space for the passage of functionary organs through the pectoral region, still there was no apparent inconvenience as a result of this overcrowding. The enormous enlargement at the anterior pectoral region was produced by enlarged pectoral glands and 10 inches of white fibrous tissue beneath the skin. This material did not present any signs of an inflammatory nature, being rather non-vascular. The blood in general was inclined to be thin and not particularly dark. The submaxillary lymphatic glands were as large as a hen's egg, other glands of the head and throat were to all appearances normal. The prescapular lymphatic glands were slightly enlarged. The abdominal viscera presented the following conditions: Stomach normal, intestines normal, with the exception of the solitary glands, which were much thickened. The mesenteric glands normal, the sublumbar somewhat enlarged, the deep inguinal and superficial inguinal showed some hypertrophy, other lymphatic glands were normal. The liver was much increased in size and of a grayish brown or yellowish brown color. There seemed to be little nodes of thickened adenoid tissue dipping in from the capsule with occasional infarct. The spleen was grossly enlarged, the capsule thickened and white in color. The malphigian bodies were granular and as

large as a small pea and the capillaries seemed to be enlarged and crowded with white cells. The pancreas normal; ascites was absent. Such large bones as were examined at the medulla showed a reddish, or yellowish-red, marrow, similar to the condition found in leukæmia. It seems that at any point where there is a lymph gland or a lymph-plexus this adenoid hyperplasia may localize.

"The general symptoms of failing health as manifested in this particular case are similar to the conditions attending leukæmia. The particular symptoms of this disease consist in the recognition of the adenoid hyperplasia in the absence of a marked leucocytosis, hence I very much regret that I had not made a microscopic examination of the blood of the patient. The submaxillary lymphatic glands are those usually the first attacked, and hence the disease in the horse might be confounded with glanders. There is, however, no pituitary discharge nor ulcer. The glands are symmetrically enlarged on each side, and a careful search will usually reveal other groups hypertrophied, and with the same uniformity. Such glands as can be palpated should receive critical examination.

"The adenoid hyperplasia in the anterior pectoral region offers very obscure and uncertain symptoms. The enlarged bronchial and mediastinal glands may become so gross as to seriously interfere with the functions of the vagus nerve, causing in cattle disturbed digestion, rumination and tympanites. In horses it causes stertorous breathing, and in carnivora and omnivora a tendency to vomit. In all animals, ordinarily the pressure on cardiac nerves leads to great irritability of the heart, which organ may act with great violence during exertion of the animal. The prominent dyspnoea in advanced stages may be explained by the presence of these thoracic hyperplasie. It has been claimed by some that the urine furnishes some important indications of this disease in its low specific gravity (horse 1.010), and presents a constant acidity, and that there is almost an entire absence of hippuric acid in the urine of the horse. Unfortunately, the urine of this patient was not examined.

"The etiology, as in leukæmia, is not well known. No definite cause can be found in the majority of cases. An accessory cause can sometimes be observed where local irritation gives rise to swelling of the adjacent lymphatic glands, and this progresses on to distinct lymphadenoma.

"Hoping this report may give rise to an interesting and profitable discussion, whereby more light may be thrown on this particular case, I thank you, gentlemen, for your kind attention."

Dr. Fisher: Breast abscesses as a sequel to influenza and from other causes are common in San Mateo, but I have never seen anything like the condition described by Dr. Healey. Could the condition be caused by refuse from the quicksilver mine?

Dr. Healey: I regret that a microscopic examination was not made, so that we could differentiate between lymphadenoma and leukæmia. The etiology of Hodgkin's disease is not known, and it is impossible to differentiate between this disease and other forms of leukæmia without a microscopic examination. It may be that the trouble was caused by refuse from the mines.

Dr. Weschcke, M. D.: We are all at sea as to the etiology of Hodgkin's disease in the human being. We know that it is a progressive malignant anæmia. There is an excess of white corpuscles in the blood and many degenerating red corpuscles. Quicksilver ores usually carry arsenic. Arsenic is extensively used as a remedy for Hodgkin's disease in the human, therefore I do not think that the refuse from the mine was an etiological factor. The lack of a microscopic examination is greatly to be regretted. The condition described in the horse, it would seem, should be attributed to some preceding profound systemic change, such as tuberculosis or pneumonia. It is unfortunate that no more interest is shown by the medical profession in comparative medicine. The study of such cases as the one described might throw much light upon many obscure diseases of human beings.

Dr. Archibald: The previous history of some debilitating disease, like influenza, might have caused the condition. It might have brought on pernicious anæmia, to which the tumors and abscesses were secondary. A microscopical examination of the blood would, perhaps, have thrown much light on the trouble.

Dr. Healey: The animal had been a racehorse and in good health up to six weeks previous to the first examination. The first thing noticed was a small lump on the anterior pectoral region. This was blistered with biniodide of mercury.

Dr. Longley: Nine-tenths of all the racehorses are "doped." A great variety of medicines are used, and could not treatment of this kind have resulted in this condition?

Dr. Archibald said that excessive drugging and the administration of various kinds of "dope" predisposed the body to these degenerations.

DISCUSSION OF MAMMITIS.

A discussion of mammitis in the cow, which was the principal topic at the meeting at Fresno, was taken up.

Dr. Longley: When the meeting adjourned at Fresno treatment of mammitis was being discussed. Dr. Bedsold and I have given up the astringent treatment, viz., the use of white lotion, etc., and have gone back to the use of camphorated oil and laxatives. In one case we had good results in the use of lard and turpentine.

Dr. H. Spencer attributed the origin of mammitis to several causes. He said that the fullness of the udder and its size in some animals rendered it particularly liable to be bruised when the animal lies down or that it might be bruised in traveling and irritation set up; that there was a stasis of blood in the glands and that extensive inflammation resulted. Another form of the disease, he said, was infectious. The infection is derived by way of the teat opening and is carried from one cow to another by the hands of the milker and vile litter. He related the experiences of Dr. Fox at Sacramento, in which an extensive outbreak (in a large dairy) was apparently of the infectious type. In the treatment of mammitis he laid great stress on the importance of suspending the udder and advised the use of warm fomentations. He said that massage was very helpful and of more value than the oleaginous applications which usually accompanied massage treatment.

Dr. Creeley: Veterinarians should understand the use of the microscope. Any method that does not take into consideration the cause and nature of the infection cannot expect the best results. It is important to find out whether the disease is tubercular or not. Tuberculosis of the udder is not uncommon, and is frequently mistaken for other forms of mammitis. The only way to distinguish is by microscopical examination. As to the treatment of mammitis, he said that the fluid extract of phytolacca was formerly much used, both externally and internally, and that it was very useful. Belladonna and camphor are all right, but will reduce the amount of milk. Potassium iodide and other iodide compounds may be used, but they will dry up the cows.

Dr. Weschcke compared traumatic mammitis in animals and in human beings, and he said: "We fight inflammation by external lotions and thus prevent caking of the gland. Be chary in the use of belladonna and camphor. We do not use the lance

if it can be helped. The use of a catheter or sound is impossible in the human subject, but in the cow important results might be obtained. A frequent result of traumatism of the mammary gland is cancer. In the treatment of inflammation of the nature of mammitis rest and antiphlogistic treatment, externally and internally, are the main things.

Dr. Sullivan said that he had used a preparation composed of ichthiol 20 per cent. and lanolin 80 per cent. with good results. He believed that the oleaginous treatment rather than the astringent should be used. He thought that concrete stable floors were conducive to the trouble.

Dr. Browning said that he had had charge for several years of a very large dairy, where not only the stable floor, but also the corral, measuring over an acre in extent, were of cement, and that he had not seen a single case of the disease there.

Dr. Archibald argued that the disease was chiefly due to infection and that the only rational treatment was to use antiseptics.

Dr. Hill had had good success with the use of turpentine and oil, and strongly advocated a reduction in the feed of the affected animals.

Several others took part in the discussion, and it was finally postponed until the next meeting.

NEW BUSINESS.

Dr. Archibald: The new law regulating the practice of veterinary medicine in this State should be enforced, and it is the business of the State Board of Veterinary Medical Examiners to do so. But it is up to this Association to help all that it can.

Dr. H. Spencer: The Board of Examiners cannot do anything without funds. I wish to make a qualified subscription to help in the enforcement of the law. If any considerable number of members will subscribe a like amount the firm of Spencer & Healey will give \$50.

Dr. Archibald spoke of the work of the last Prosecuting Committee of the Society. He said that the money they used was well expended and that the number of quacks in the State was greatly reduced. He said that he would give \$50.

Dr. Longley, of the firm of Longley & Betsold, said that they would contribute \$50.

Dr. Creeley: Every action of the Prosecuting Committee created dissatisfaction. The motives of Dr. Archibald and the rest

of the committee were entirely unselfish. More were prosecuted around the Bay because the expense was less, but we tried to be just to all. We got seven or eight convictions. Each county should contribute to a fund of its own.

Dr. H. Spencer: Prosecuting in each county won't work. We should try one or two prosecutions in various places among the most prominent quacks, and the rest will quit. It don't matter so much where the prosecutions are made; the main thing is to raise the money.

Dr. Creeley: The old committee published a pamphlet with the names of the illegal practitioners, which did some good. We were charged with misappropriation of funds, but the fact is that Dr. Archibald has gone into his own pocket for funds to carry on the work.

Dr. Hogarty: Everyone should contribute to this work. The Prosecuting Committee gets abused, and everyone should have a part in the work. Dr. Archibald has worked hard and sincerely.

President Browning then announced the following as a Judiciary Committee: Dr. Longley, of Fresno; Dr. Donnelly, of Oakland; Dr. Othier, of Salinas; Dr. Carroll, of Chico, and Dr. Danielson, of Medara. The announcement of the committee was followed by a general discussion of how to enforce the new law, participated in by nearly every one present.

President Browning asked Dr. H. Spencer to take the chair.

Dr. Browning: Three days after the Governor signed the new law regulating the practice of veterinary medicine the old State Board of Veterinary Medical Examiners met in Los Angeles and issued 35 licenses to practice.

Dr. Browning then read a letter from the Attorney-General, stating that these licenses were void and of no effect. Dr. Browning said that he heartily disapproved of the action of the Board and that he was sorry that the members of the Board were not all present so that the matter could be explained.

Dr. Ryan stated that although he was a member of the Board he was not present at the last meeting. Some money was due him for expenses to attend a meeting at Sacramento, and that if there were any funds left over he did not get any of the money.

Dr. Creeley: The members of the Association have been misinformed regarding this affair. The other members of the Board should be present. I do not care to make any statements until that time. I will see that the old Board are present at the next meeting and that the matter is explained.

Dr. Browning then read the names of the 35 applicants for the licenses which were granted at the Los Angeles meeting.

Dr. Archibald: I move that the Secretary write to the members of the former California State Board of Veterinary Medical Examiners and cite them to appear at the next meeting of this Association and show cause why their names should not be dropped from this Association.

The motion was seconded and carried.

Dr. Archibald: I move that, in view of the opinion given the State Board of Examiners in Veterinary Medicine by the Attorney-General in regard to legality of the State Veterinary Board in issuing licenses to practice to 35 applicants on March 26, 1907, said applicants be denied membership in this Association until such time as they are qualified under the laws of California.

The motion was duly seconded and carried.

A motion was duly carried that the Secretary be instructed to ask, by letter, each member of the Association if he would contribute a stipulated amount, to be put into a fund to be known as the "Prosecuting Fund."

Dr. Archibald moved that the chairman of the Judiciary Committee (Dr. Longley) be authorized and instructed to prepare a voluntary subscription list for prosecuting illegal practitioners and that he have subscription blanks printed and sent to every practicing veterinarian north of the Tahachipi Mountains.

The motion was duly seconded and carried.

A motion was carried that the Secretary *pro tempore* use the \$5 which he had received from Dr. Healey (the membership fee of Dr. Hill) to pay for the room where the present meeting was being held.

President Browning suggested that he be authorized to write to Secretary Eastman to find out if he can attend the meetings of the Association, and if not be authorized to act in his place. There being no objections, Dr. Browning said he would do this.

A motion was carried that an adjourned meeting be held in Sacramento on the week of the State fair. Date and place to be fixed by call of the President.

President Browning appointed as essayists for the next meeting Drs. Hill, Seggswordth and Nielson.

The meeting was adjourned, to meet in Sacramento during the week of the State fair.

C. M. HARING, *Secretary pro tempore*.

NEW YORK STATE VETERINARY MEDICAL SOCIETY.

The meeting for 1907 will be held in New York City on Tuesday, Wednesday and Thursday, Sept. 24, 25 and 26. Secretary Stone has sent out an outline of the program, which is very attractive and should insure a great meeting.

The session for Tuesday will be called to order in the Academy of Medicine, 17 West Forty-third street, at 10 A. M., and the day will be consumed with the business of the society, the reports of committees, and any papers on the program that may be reached. The second day's session will take place in the park of the New York Zoological Society at One Hundred and Eighty-third street and Southern boulevard, easily reached by the subway trains. Dr. W. Reid Blair, member of the State Society, is pathologist and veterinarian of the "Zoo," and through his kindness this day's session is possible among these interesting and educational surroundings. If the weather is pleasant the meeting will be held in the open air; but if disagreeable there are several halls in the park well suited for meeting purposes. While the members are engaged in reading and discussing the papers of the program the ladies will be delightfully entertained in visiting the rare animals of the vast collection, under competent guides, and in sailing upon the lake in the electric launches of the park. At noon the Veterinary Medical Association of New York City will tender the visiting veterinarians and their friends a modest luncheon in the Boat-house Restaurant.

The third day will be devoted entirely to a surgical and medical clinic and will be held in the large new veterinary infirmary of the Fiss, Doerr & Carroll Horse Company, in Bull's Head, Twenty-fourth street, where the best facilities for the conduct of such a clinic ever enjoyed by the society will be at its command. Dr. J. Elmer Ryder is the veterinarian of the company and a member of the Committee of Arrangements of the society. So with earnestness for success, and with the vast clinical facilities furnished by the largest horse mart in the world, it is assured that this feature alone should attract every member to the meeting, while visitors from everywhere are welcome.

The Committee of Arrangements of the State Society are: Dr. Charles E. Clayton, chairman; Dr. George H. Berns, Dr. J. Elmer Ryder and Dr. Roscoe R. Bell. The committee from the City Association to act with the above committee consists of

Dr. Robert W. Ellis, chairman; Dr. E. B. Ackerman, Dr. F. C. Grenside, Dr. W. Reid Blair, Dr. D. J. Mangan and Dr. Theodore A. Keller.

SOCIETY OF THE VETERINARY ALUMNI OF THE UNIVERSITY OF PENNSYLVANIA.

The annual meeting was held June 19 at "The Orchard," the beautiful home of the Philadelphia Athletic Club at Essington, on the Delaware River.

It was one of the most successful meetings which we have ever held. There was not a moment that was not crowded with enjoyment. The principal feature of the afternoon was a base ball game between the class of 1907 and the older alumni. It brought back to many of us our college days, which have long gone by, and aroused our enthusiasm to such an extent that the 1907 boys had to fight hard for the honor of winning the game. After the game time passed pleasantly with tennis, quoits, shuffleboard and other amusements until the business meeting was called at 6 o'clock. The treasury was shown to be in the most flourishing condition since the organization of the society.

Dr. S. J. J. Harger, our historian, told us about each member of the classes of 1891 to 1896. This form of historian's report has been found to be particularly interesting.

On motion, it was decided to re-elect all the officers of the past year, so the Secretary cast the ballot, which resulted as follows:

President—F. H. Mackie, 1889.

Vice-President—A. F. Schreiber, 1888.

Secretary-Treasurer—B. T. Woodward, 1902.

Historian—S. J. J. Harger, 1887.

Executive Committee—W. H. Ridge, 1888; J. W. Adams, 1892, and C. J. Marshall, 1894.

At the close of the meeting D. B. Fitzpatrick, chairman of the Committee on Arrangements, gave us the welcome news that the banquet was awaiting us. The pleasures of our banquet were increased by a musical and humorous entertainment. Later we all joined in an original song dedicated to our beloved Dean, Leonard Pearson. His response, telling us of the new appropriations which the Veterinary Department had received, of the successful beginning of our new buildings and of the great work planned for the future, raised us all to the enjoyment of a high

degree of optimism. Many of our old friends added to the general pleasures of the occasion, and everyone regretted when the hour came to disperse and return to Philadelphia.

B. T. WOODWARD, V. M. D., *Secretary*.

VETERINARY ASSOCIATION OF THE DISTRICT OF COLUMBIA.

A special meeting of the Veterinary Association of the District of Columbia was held on the evening of June 19. Twenty-three members were present. Drs. G. H. Grapp, R. H. Talty, — — Hungerford and M. P. Smith were elected to membership. The report of the Banquet Committee was received. Several amendments to the by-laws were proposed and discussed. The meeting adjourned at 10.30 P. M. The next regular meeting will be held in the fall, the meetings being discontinued during the summer months.

F. M. ASHBAUGH, D. V. S., *Secretary*.

SCHUYLKILL VALLEY VETERINARY MEDICAL ASSOCIATION.

The meeting was called to order in the Board of Trade Rooms, Reading, Pa., by President Kohler, June 10, 1907. Roll-call showed the following members present: Drs. Gruber, Kohler, Huyett, Wehr, Noack, Potteiger and Bieber. Minutes of previous session read and approved.

President Kohler delivered an excellent but brief address.

Dr. Henry A. Schneider, of West Reading, was elected to membership. He is a University man, having graduated last year.

The Secretary read a number of communications.

Dr. Wehr, Chairman of the Committee on Milk and Meat Inspection, urged all practitioners to put forth the greatest efforts possible to improve the system by enlightening the farmer or dairyman upon the subject.

Among the visitors present were Mr. Kenny, representing the West Disinfectant Co., and Mr. Nagle, manufacturer of veterinary and medical instruments.

Meeting adjourned for luncheon and reconvened at 1:30 p. m.

Dr. Noack, of the Committee on Intelligence and Education, spoke of the new meat inspection law passed by the Legislature, and of the State appropriation for veterinary buildings for the

University of Pennsylvania. These buildings are now being erected and when completed the University of Pennsylvania will have one of the best equipped veterinary institutions in the United States.

Dr. Huyett gave a brief report as delegate to the Pennsylvania State Veterinary Medical Association.

The election of officers resulted as follows:

President—Dr. D. R. Kohler.

Vice-President—Dr. Allen Potteiger.

Treasurer—Dr. U. S. G. Bieber.

Secretary—Dr. W. G. Huyett.

Corresponding Secretary—Dr. C. D. Gruber.

Board of Directors—Drs. E. D. Longacre, O. G. Noack and I. C. Newhard.

On motion all the officers were elected by acclamation.

As Dr. Newhard, who was to have presented the subject of "The Treatment of Wounds," was unavoidably absent, and he having failed to send in his paper, the subject was discussed by many of those present.

Dr. Bieber gave an excellent talk on "Laryngitis and Pharyngitis," especially with reference to treatment. Every member present related the treatment with which they had had the greatest success.

The following every-day though often puzzling subjects were taken up and thoroughly discussed by all present: Parturient paresis, glanders (including the mallein test and the agglutination method of diagnosing it), tuberculosis and the tuberculin test, azoturia, tetanus and pulmonary emphysema.

The next meeting will be held at Reading December 18, 1907.

W. G. HUYETT, *Secretary*.

THE MISSOURI VALLEY VETERINARY ASSOCIATION held a brief session, July 8, at Kansas City, Mo., and adjourned to meet in Kansas City September 9, 1907.

NEW (?) HORSE DISEASE.—*Circleville, Ohio, July 6.*—A new disease has appeared among the horses in training at the driving park. There are 27 of them, and all have swollen tongues, covered with a rash and considerable slobber. Two of the trainers have become infected—having frightfully swollen arms and the red rash. It is unknown to the veterinaries here.—(*Cincinnati Enquirer, July 7.*)

NEWS AND ITEMS.

DR. ARTHUR TRICKETT, of Kansas City, made a two-weeks' visit to friends in New York City and vicinity in July.

DR. OTTO EMMITT, of Hiattsville, Kansas, has accepted temporary appointment as Veterinary Inspector with the B. A. I. and is stationed at Kansas City.

DR. E. P. BARNHART, formerly of the Ohio State University Veterinary Hospital, has joined the Bureau of Animal Industry force and is stationed at Kansas City.

DR. J. W. CONNOWAY, of the Missouri State University, visited Kansas City the first week in July. The Doctor has nearly recovered from a serious attack of typhoid fever.

DR. ELMER LASH, Veterinary Inspector B. A. I., Quarantine Division, Englewood, Kans., spent a few days in Kansas City recently to receive treatment for rupture of the right tympanic membrane.

DR. C. J. SIHLER, Kansas City, is taking a long deferred vacation and is visiting his old home at Simcoe, Canada. The Doctor will make a tour of Eastern cities and include the Jamestown Exposition.

GEORGE BOLIN, V. S., of Washington, Indiana, died at Circleville, Ohio, July 11, of locomotor ataxia. He was a graduate of the Ontario Veterinary College and had been a sufferer from the disease which caused his death for over two years.

DR. PIERRE A. FISH, professor of materia medica and physiology at the New York State Veterinary College, is at present in Europe, visiting veterinary colleges and laboratories in various countries. He will return to the States in September.

SECRETARY TAIT BUTLER, of the Association of Veterinary Faculties and Examining Boards of North America, is exerting himself to make the meeting at Kansas City worth while. He believes, and the REVIEW agrees with him, that many educational reforms can be brought about through the proper spirit in this organization.

FRANK WORK, the famous New York road driver, is now 88 years old and takes a spin in a one-man wagon every day. His old trotter "Edward" is alive and in good health at 35 years of age, though he has been on Mr. Work's pension list for a long

time. It is said that in his will the old driver has provided for the care of all his horses so long as they may live.

DR. HUGH THOMASON, of Nashville, Tenn., has resigned an inspectorship in the quarantine service of the Bureau of Animal Industry to accept the position of Chief Petty Officer in the Medical Department of the U. S. Navy and is in charge of the sick bay on the U. S. S. *Alliance*, Calebra, Porto Rico. The Doctor is veterinary inspector of cattle slaughtered for the fleet at that station.

DR. A. T. PETERS, of Lincoln, Neb., was employed as one of a board of experts by the Missouri State Board of Agriculture during the latter part of June to test a dairy herd for tuberculosis. The test showed a large percentage of tuberculosis and confirmed the finding of the State Veterinarian, Dr. Luckey, who had quarantined the herd, and which the owner tried to have released without purifying the herd.

DR. A. G. HOPKINS, who has for a number of years been the capable editor-in-chief of the *Farmers' Advocate*, of Winnipeg, Manitoba, has relinquished his editorial work and has joined the staff of Veterinary Director-General Rutherford, in the Live Stock Division and Health of Animals Branch at Ottawa. During the period of his literary labors Dr. Hopkins did much for the veterinary profession, and his graceful pen will be seriously missed from the pages of the *Advocate*.

BANQUET TO DR. S. H. WARD.—As Dr. Ward has resigned his position as Secretary and Executive Officer of the State Live Stock Sanitary Board of Minnesota and accepted the position of Chief of the Meat Inspection Department of the Dominion of Canada, a few of his friends gave a banquet in his honor at the Merchants' Hotel, St. Paul, June 11, which will probably be long remembered by all present. Deep regret was felt by all present that we were going to lose the Doctor, not only from this State, but also from the United States. The banquet was well attended by many professional friends and also several leading state politicians. Dr. Chas. E. Cotton, of Minneapolis, acted as toastmaster. The following gentlemen responded to toasts: Hon. J. J. Furlong, L. D. Baird, G. A. Babenbrien, John Timpane, Drs. F. D. Ketchum, W. L. Beebe, B. W. Kirby, M. S. Whitcomb, D. D. McDonald, Geo. A. Dallimore, Richard Price, Geo. E. Metzgar and S. H. Ward. Dr. Price, after making an appropriate farewell toast, presented Dr. Ward with a 32nd degree Scottish Rite watch-charm set with a beautiful diamond.

VETERINARY MEDICAL ASSOCIATION MEETINGS.

In the accompanying table the data given is reported by many Secretaries as being of great value to their Associations, and it is to be regretted that some neglect to inform us of the dates and places of their meetings.

Secretaries are earnestly requested to see that their organizations are properly included in the following list :

Name of Organization.	Date of Next Meeting.	Place of Meeting.	Name and Address Secretary.
American V. M. Ass'n.....	Sept. 10-13, '07..	Kan. City, Mo.	R. P. Lyman, Hartford, Ct.
Vet. Med. Ass'n of N. J.....	.....	.....	W. H. Lowe, Paterson.
Connecticut V. M. Ass'n.....	Aug. 6, 1907.....	New Britain..	B. K. Dow, Williamantic.
New York S. V. M. Soc'y.....	Sept. 24, 25, 26..	New York C'y.	G. T. Stone, Middletown.
Schuylkill Valley V. M. A.....	Dec. 18, 1907.....	Reading.....	W. G. Huyett, Wernersville.
Passaic Co. V. M. Ass'n.....	Monthly.....	Paterson, N. J.	H. K. Berry, Paterson, N. J.
Texas V. M. Ass'n.....	Call Exec. Com.	.....	E. L. Lewis, Waxahachie.
Massachusetts Vet. Ass'n.....	Monthly.....	Boston.....	F. J. Babbitt, Lynn, Mass.
Maine Vet. Med. Ass'n.....	.....	.....	R. E. Freeman, Dexter.
Central Canada V. Ass'n.....	.....	Ottawa.....	A. E. James, Ottawa.
Michigan State V. M. Ass'n.....	State Fair Week	Detroit.....	Judson Black, Richmond.
Alumni Ass'n, N. Y.-A. V. C.....	April, 1908.....	141 W. 54th St.	T. F. Krey, N. Y. City.
Illinois State V. M. Ass'n.....	.....	.....	N. I. Stringer, Paxton.
Wisconsin Soc. Vet. Grad.....	.....	.....	S. Beattie, Madison.
Illinois V. M. and Surg. A.....	.....	Decatur.....	C. M. Walton, Rantoul.
Vet. Ass'n of Manitoba.....	Not stated.....	Winnipeg.....	F. Torrance, Winnipeg.
North Carolina V. M. Ass'n.....	July 2-3, 1908..	Raleigh.....	Adam Fisher, Charlotte.
Ontario Vet. Ass'n.....	Summer, 1907..	Ottawa.....	C. H. Sweetapple, Toronto.
V. M. Ass'n, New York City.....	1st Wed., Oct.....	141 W. 54th St.	W. Reid Blair, N. Y. City.
Ohio State V. M. Ass'n.....	.....	Columbus.....	W. H. Gribble, Wash'n C. H.
Western Penn. V. M. Ass'n.....	1st Wed. ea. mo.	Pittsburgh.....	F. Weitzell, Allegheny.
Missouri Vet. Med. Ass'n.....	Sept. 9, 1907.....	Kansas City..	F. F. Brown, Kansas City.
Genesee Valley V. M. Ass'n.....	January, 1908..	Rochester.....	J. H. Taylor, Henrietta, N. Y.
Iowa Veterinary Ass'n.....	.....	.....	H. C. Simpson, Denison, Ia.
Minnesota State V. M. Ass'n.....	.....	.....	C. A. Mack, Stillwater.
Pennsylvania State V. M. A.....	.....	.....	C. J. Marshall, Philadelphia.
Keystone V. M. Ass'n.....	Monthly.....	Philadelphia..	A. W. Ormiston, 102 Herman St., Germantown, Pa.
Colorado State V. M. Ass'n.....	.....	Denver.....	M. J. Woodliffe, Denver.
Missouri Valley V. Ass'n.....	Sept. 9, 1907.....	Kansas City..	B. F. Kaupp, Kansas City.
Rhode Island V. M. Ass'n.....	June and Dec....	Providence...	T. E. Robinson, Westerly, R. I.
North Dakota V. M. Ass'n.....	.....	.....	C. H. Martin, Valley City.
California State V. M. Ass'n.....	Mch. Je. Sep. Dec	San Francisco	Chas. Eastman, San Luis Obispo
Southern Auxiliary of California State V. M. Ass'n.....	Jan. Apl. Jy. Oct.	Los Angeles..	J. A. Edmons, Los Angeles.
South Dakota V. M. A.....	.....	.....	E. L. Moore, Brookings.
Nebraska V. M. Ass'n.....	.....	.....	Hans Jensen, Weeping Water.
Kansas State V. M. Ass'n.....	Jan., 1908.....	Manhattan...	Hugh S. Maxwell, Salina.
Ass'n Médécalle Veterinaire Française "Laval".....	1st and 3d Thur. of each month	Lec. Room, Laval Un'y, Mon.	J. P. A. Houde, Montreal.
Province of Quebec V. M. A.....	.....	Mon. and Que.	Gustave Boyer, Rigand, P. Q.
Kentucky V. M. Ass'n.....	Nov. 19, 1907.....	Not decided...	D. A. Piatt, Lexington.
Washington State Col. V. M. A.....	Monthly.....	Pullman, Wa.	Wm. D. Mason, Pullman.
Indiana Veterinary Association.....	An'l, Jan., '08...	Indianapolis..	E. M. Bronson, Indianapolis.
Louisiana State V. M. Ass'n.....	.....	.....	E. P. Flower, Baton Rouge.
Twin City V. M. Ass'n.....	2d Thu. ea. mo.	St. P.-Minneap	S. H. Ward, St. Paul, Minn.
Hamilton Co. (Ohio) V. A.....	.....	.....	Louis P. Cook, Cincinnati.
Mississippi State V. M. Ass'n.....	.....	.....	J. C. Robert, Agricultural Col.
Georgia State V. M. A.....	.....	.....	L. C. Willoughby, Experiment
Soc. Vet. Alumni Univ. Penn.....	June, 1908.....	Philadelphia..	B. T. Woodward, Chicago.
Virginia State V. M. Ass'n.....	.....	.....	S. C. Neff, Staunton.
Oklahoma V. M. Ass'n.....	.....	.....	W. H. Martin, El Reno.
Veterinary Practitioners' Club.....	Monthly.....	.....	A. F. Mount, Jersey City.
Vet. Ass'n Dist. of Columbia.....	Last W. ea. mo.	2116 14th St.	F. M. Ashbaugh, Wash., D. C.
B. A. I. Vet. In. A., Chicago.....	2d Fri. ea. mo.	Chicago.....	R. J. Stafford, U. S. Yards.
Arkansas Veterinary Society.....	.....	.....	B. H. Merchant, Little Rock.
York Co. (Pa.) V. M. S.....	Sept. 3.....	York, Pa.....	E. S. Bausticker, York.
Philippine V. M. A.....	.....	.....	R. H. McMullen, Manila.
Montana State V. M. A.....	Oct. 2, 1907.....	Helena.....	E. T. Davison, Helena.

PUBLISHER'S DEPARTMENT.

Subscription price, \$3 per annum, invariably in advance; foreign countries, \$3.60; students while attending college, \$2; single copies, 25 cents.

Rejected manuscripts will not be returned unless postage is forwarded.

Subscribers are earnestly requested to notify the Business Manager immediately upon changing their address. Make all checks or P. O. orders payable to American Veterinary Review.

A representative from MAPLEWOOD HACKNEY STUD has called upon every individual reader of the AMERICAN VETERINARY REVIEW this month, and there can be no doubt as to the reception he will get when our readers open the advertising section of the REVIEW at page 18 and behold the beautiful conformation and handsome face of Langton Performer as he trots happily toward them. Surely the picture of this truly beautiful and wonderful stallion will create a strong desire to see, in the life, him and others of his kind that the ideal farm at Attica holds.

Some time ago, after many inquiries as to where Tenaline could be procured in this country, we wrote the London house, Messrs. Willows, Francis, Butler and Thompson, Ltd., requesting them to furnish us the information so that we might answer all inquiries at one time through this department. They replied in June (but too late to reach the July issue) that it is now stocked by Messrs. Schieffelin & Co., 170 and 172 William St., New York, and we hereby answer the several inquiries in regard to it.

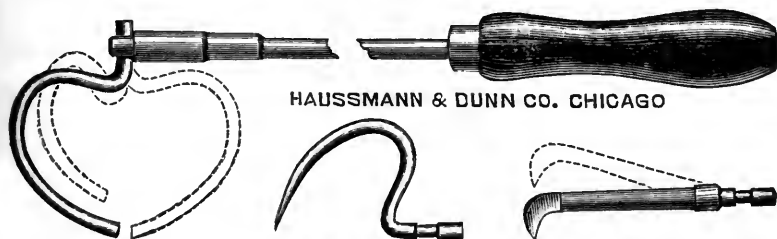
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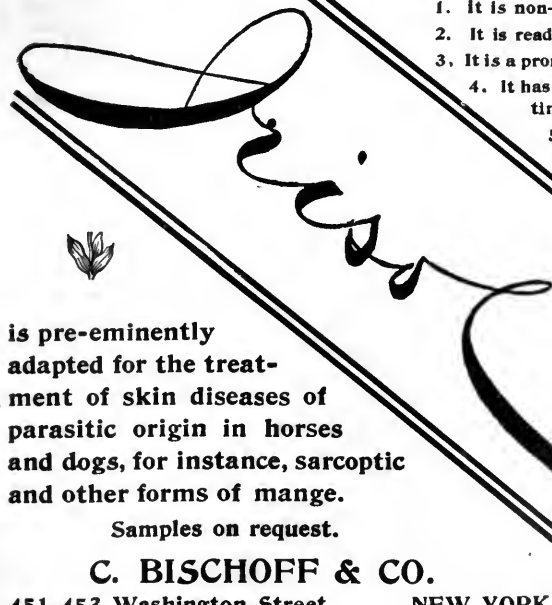
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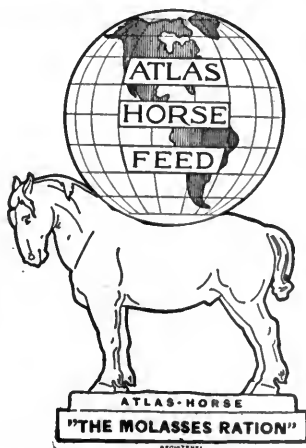
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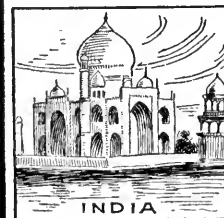


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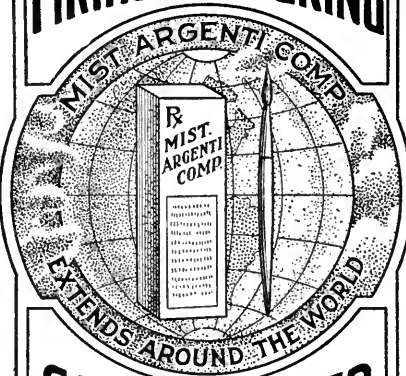
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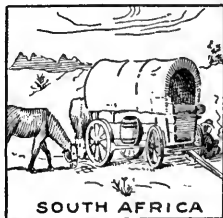
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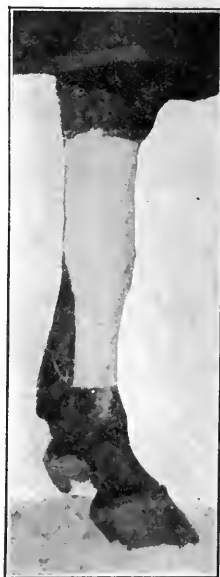
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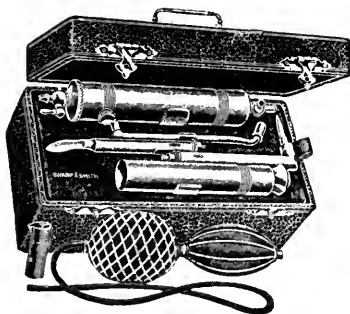
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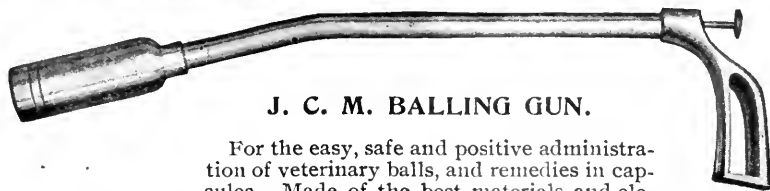
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AMERICAN VETERINARY REVIEW.

SEPTEMBER, 1907.

EDITORIAL.

“REVIEW” VOLUME NOW OF SIX NUMBERS.

The phenomenal growth of the AMERICAN VETERINARY REVIEW has compelled the publishers to divide the yearly volume into two sections. Therefore, Vol. XXXI. will close with this September number, and Vol. XXXII. will begin with October. The necessity for this step has been apparent for some time, although the departure from the old established system has been delayed from lack of courage to violate tradition. Recent volumes when bound are unwieldy and not convenient for the library. For instance, Vol. XXVIII. contained 1,236 pages, Vol. XXIX. 1,450 pages, Vol. XXX. 1,526 pages, and it now appears that Vol. XXXI. would (if run through until April) be still larger. To continue under the old system meant one of two things: the production of a yearly volume too large for practical library purposes, or a curb to our ambition to give the profession the greatest monthly visitor in the world. The former proposition was rejected; the latter was impossible. Therefore, the semi-annual volume imposed itself without an alternative.

There will be no change in the price, which will remain three dollars per annum, the subscriber receiving *two* volumes instead of one, each of which will be as large as those of a few years ago, and about the size of other veterinary publications requiring twelve numbers for a volume.

The REVIEW congratulates the profession of the Western Continent upon the fact that *they* have built up the *largest* veterinary periodical in the world, and, by the testimony of thousands of readers, the *best* journal from every standpoint. From

month to month little extracts from many of these signed letters have been published as an encouragement to the real makers of the REVIEW—the contributors. In appreciation of the success which has crowned their efforts, the publishers have recently instituted mechanical improvements which will result in the coming volume being typographically as good as the best.

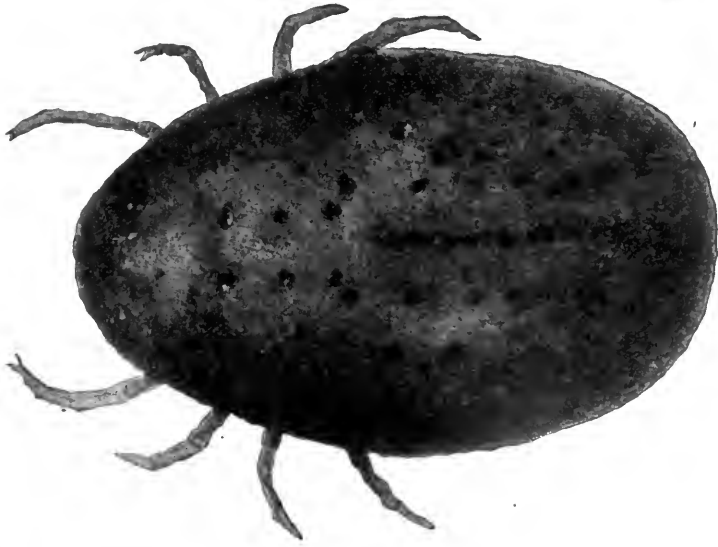
With every detail to make perfection in journalism in first-class order, we may look into the future with optimistic eyes, and believe that the REVIEW's glorious past will be an inspiration for a glorious future.

Many years ago the REVIEW declared that it would be just what the profession made it, and pledged its word that the more success it met with the greater journal it would be; that whatever success came to it would be reflected in its increased excellence. The publishers have no hesitancy in placing before the veterinary profession the closing volume as a plain statement of their stewardship.

EUROPEAN CHRONICLES.

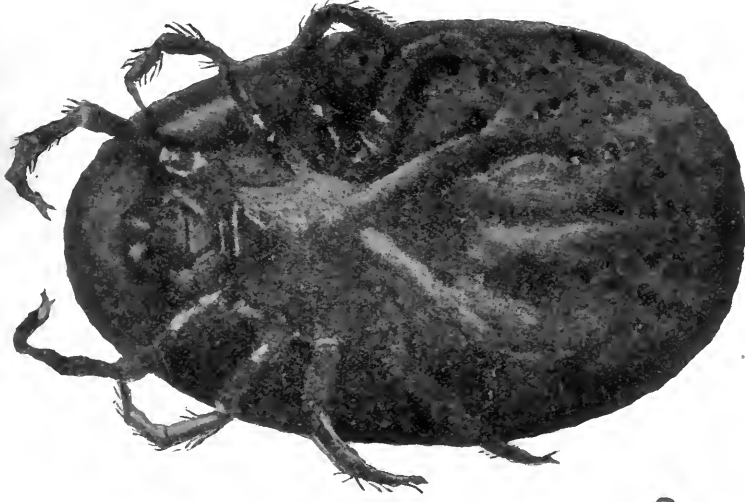
PARIS, FRANCE, JULY 15, 1907.

TWO NEWLY-DESCRIBED TICKS.—Now that the part that ticks play in the pathogeny of some of the diseases of domestic animals has been demonstrated a scientific fact, veterinarians can no longer remain ignorant of their natural history and of their existence, and any newcomers added to the long list of those already known will necessarily impose a certain amount of interest. It is on that account that the relation made in the *Transvaal Agricultural Journal* of April last, by C. W. Howard, B.A., on "Two Little-Known Ticks of the Transvaal," deserves to command the attention of entomologists and also of veterinarians. The illustrations that we herewith reproduce from the article show the external appearance of these two new ticks, which I am told by entomologists here have never been seen by them, and of which I have found no mention anywhere else.



A

A. Dorsal (upper) surface.
B. Ventral (lower) surface.



B



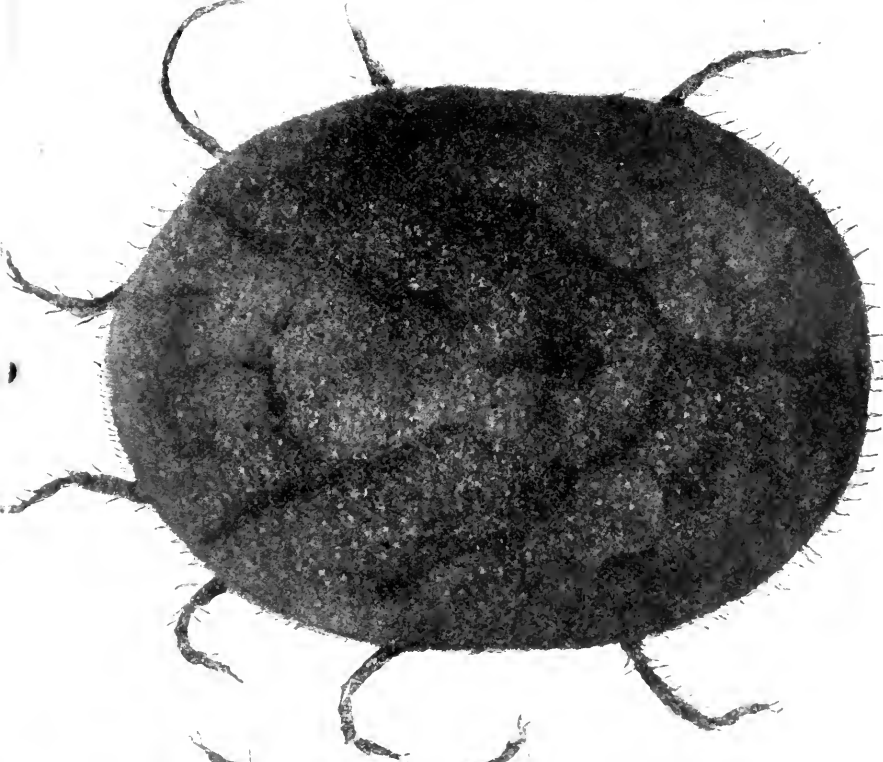
C

The Fowl Tick.
(*Argas persicus*).

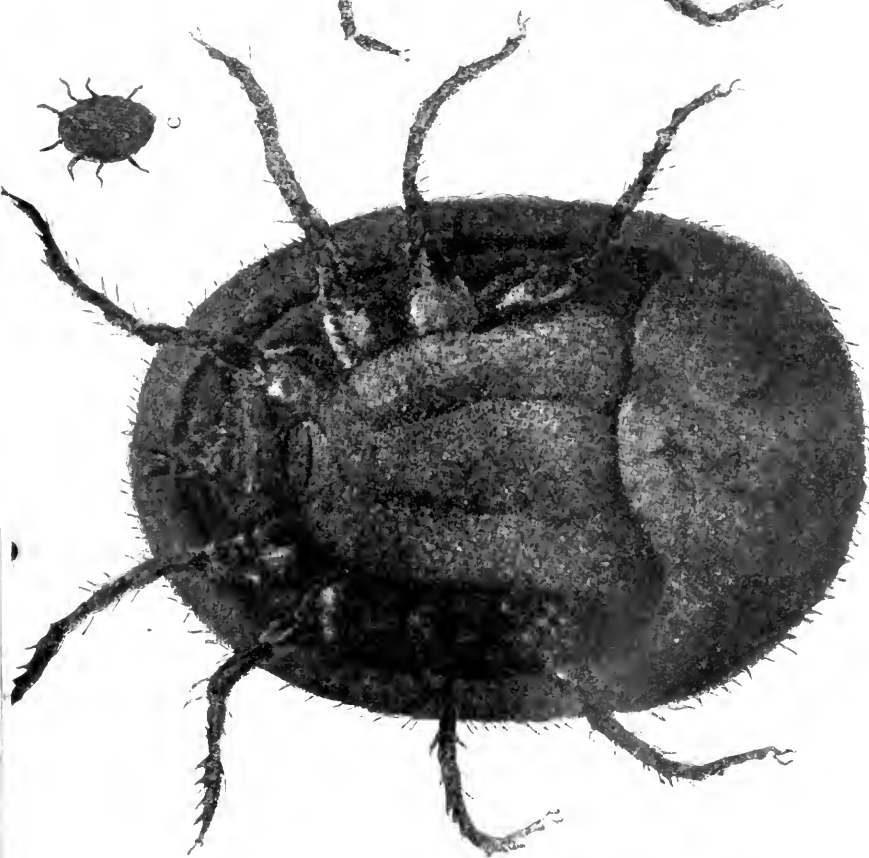


D

C. Eggs, much enlarged.
D. Tick, natural size.



A



B

The Tampan.

(*Ornithodoros savignyi* coxus)

B. Ventral surface.

C. Tick, natural size.

A. Dorsal surface.

These ticks are the fowl tick (*Argas persicus*) and the Tampan (*Ornithodoros savignyi cactus*).

The first is very common in South Africa, Australia, India, Southern Europe and Persia. In the latter country it was first found and described, and wonderful stories are told of the prevalence of them in the houses, where they make it necessary for the inhabitants to move frequently in order to escape their attacks. The bite was supposed to be poisonous and to always result in death. In South Africa they bite people, but beyond this annoyance, no harmful results seem to follow. The tampan is closely related to the fowl tick, but it differs from it much by being larger, longer and not as flat. It is a great nuisance to people. It conceals itself under the bark of trees or in dry sand, while the fowl tick is concealed in the walls of the fowl-houses. The tampan bites are injurious, as they cause much inflammation, soreness and swelling. The fowl tick offers more interest to the veterinarian, as the damages resulting from its presence are better known.

In animals, the fowl ticks attack fowls, chickens, ducks, turkeys and pigeons. Ostriches and canaries have also suffered on a few occasions. It is not uncommon to hear of fowls dying daily in large number. They seem free from disease and no cause can be found for such an epidemic. However, a post-mortem reveals the fact that none or very little blood is left in the fowl, and upon searching the cracks of the walls of the chicken-house, the cause is easily found in the numerous bedbug-like creatures, hiding away from the daylight and each swollen to its fullest extent with blood. The fowls have simply died from loss of blood, which the ticks have sucked from them. It is probable that these ticks may transmit some infectious diseases of fowls.

The fowl tick resembles a bed-bug very much in shape. Its body is very flat, elliptical in shape, light-brown in color when empty and dark-bluish-gray when swollen with blood. Unlike the cattle tick, there is no hard, shiny shield upon its back, and the head is not on the front edge of the body, but on the under

surface, just in front of the first pair of legs. The whole body is covered with a soft skin. The vitality of the adult animal is remarkable. They have been known to live in a vacant fowl-house as long as 37 months without food and they may be kept in an air-tight box 27 months and survive.

* * *

SYNOVIAL FOSSÆ.—A very interesting subject of anatomical importance was agitated a short time ago at the Société Centrale de Médecine Vétérinaire by the Professor of Anatomy of the Alfort School, Director Barrier, in relation to some peculiarities of diarthrodial articular surfaces, and especially the synovial fossæ. What is a synovial fossæ?

At first and before answering that question, Mr. Barrier said that they do not seem to exist in the human, or that, at least, classical works did not mention them. But such was not the case in veterinary subjects; and then references were made of the works of Chauveau and his collaborators. Then Mr. Barrier gave the definition as follows: They are "completely isolated in the middle of the articular cartilages, forming depressions, always well circumscribed, but varying in their extent, their form and even their situation. At their bottom they are lined by a fine synovial membrane, lying on the bone or a little adipose tissue. These are the fossæ that practitioners may have mistaken for articular lesions."

"For the present," adds the Professor, "we believe that true synovial fossæ exist in horses only and in the humero-radial and the tibio-tarsal joints." "We have not observed clearly this anatomical peculiarity in any other joints;" . . . "they ordinarily repeat themselves on both opposite cartilage surface of a joint."

Why all that? Probably because in March last a specimen was exhibited, which showed that the superior extremity of the radius and that of the cubitus were the seat of lesions of ulcerative arthritis, characterized by the disparition of the median ridge, which in the normal state divides the radial surface in two parts

and with also the destruction of the cartilage covering the sigmoid notch of the cubitus. The history of the case was curious. The animal had been bought a few months before, when after a short time he suddenly became lame forward. Periostitis was suspected. Firing and blistering were resorted to, but with no permanent result; the lameness removed temporarily, returned when the horse was put to work. Ultimately the animal died from intestinal hæmorrhage and post-mortem of the leg revealed the lesions alluded to above. Were the lesions those of arthritis, or was it a synovial fossa? Similar errors have been made before, practitioners having taken for ulcerations what were fossæ and *vice versa*. The question must be studied and researches are being made to solve the question.

It may not be out of place, however, to look a little more on the problem as presented by the Honorable Director of Alfort. And to the question of Prof. Barrier, I feel inclined to answer "Yankee fashion," and say: (1) Is there such a thing as synovial fossæ, as they are understood to-day; and, again (2), is it possible to make an error between them and an ulceration of arthritis?

Let us consider the first. It is said that only equines, horses, have synovial fossæ. Let us admit this as correct. But if so, why is it that the presence of synovial fossæ is not recognized by all veterinary anatomists?

Among the French: Girard in his edition of 1807 says nothing of them in his osteology and his arthrology.

Rigot in 1840 writes: "Hollowed in the very center of the rubbing surfaces, synovial fossæ represent kinds of little round cups which the diarthrodial cartilage stops suddenly"; and, again, at the article on scapulo-humeral joint, he says: "On the articular surface of the scapula, the cartilage that covers it is quite often showing a synovial fossa." He also mentions one on the humeral surface of the shoulder joint and on those of the elbow. For the hock joint, Rigot mentions one on the ridge of the tibial surface, but none on the astragalus.

Chauveau, whose superior work has had many editions and has been translated into several languages, says nothing of them in osteology, but in syndesmology they are noticed. For instance, for the shoulder joint, the glenoid cavity of the scapula has one, although the humerus has none. In the elbow joint the articular surfaces of the three bones (humerus, radius and cubitus) have one. In the hip joint, one is in the cotyloid cavity and none on the femur. In the hock joint, one is on the tibia and none on the astragalus.

Among English authors, let us see. Nothing is said in the description of the surfaces by which these bones correspond: in Percivall's anatomy, nor in Stangeway's. Steele in 1876 said, speaking of the inferior extremity of the humerus: "In the center of the articular surface is a roughened depression with round edges. This must not be mistaken for an ulceration." With this exception, nothing is said for any other articular surfaces. Of course, in the translations of Chauveau, we must find what exists in the French text. Yet nothing is found in the osteology, except in one of the illustrations, which is marked "fossa." The same absence of notice of these fossæ is observed in the syndesmology, with the exception that one is mentioned on the bones of the elbow and also one on the ridge of the tibial surface on the inferior extremity.

Among the Italians, Prof. Mongiardino in the most recent work on anatomy ignores the synovial fossæ, although he makes mention that at times one may found in the scapulo-humeral joint.

Of German authors, I can only refer to the anatomy of F. A. Leigh, which ignores them entirely.

It seems from the inquiries among the works on anatomy through the world, that while the presence of the synovial fossa is accepted by modern French classical works, they are ignored in those of other countries—and that, contrary to the remarks of Prof. Barrier, so-called synovial fossæ have been spoken of in other joints than the elbow or the tibio-tarsal; and, again, that

while they may exist on one of the articular surfaces of a joint, there may be none on the other, instead of "ordinarily repeating themselves on two opposite surfaces," as he claims.

But let us admit the existence of synovial fossæ! Is it really possible to make an error and to take a cartilaginous ulceration for one of these peculiarities of articular surfaces? It seems that close examination ought to be sufficient to guard against such an error. The description given by Prof. Barrier and the aspect presented by an ulcerated diarthrodial cartilage ought to settle the question, without requiring such minute examination, and be sufficient to vanish all possibility of mistakes. And if this is not enough, I will gladly refer every one to the work of Percivall on "Lameness," where, at pages 54 and 78, will be found real reproductions of ulcerated cartilages, which will show that only the grossest carelessness might explain a mistake. But it is not every one who will take stock in works written sixty years ago.

* * *

DIAGNOSIS BY LOCAL APPLICATIONS OF TUBERCULIN.—What is *Cuti-reaction*?

It is the name that Prof. Vallée, of Alfort, proposes for a new method of diagnosis for tuberculosis.

Some months ago an Austrian physician, Dr. Von Pierket, published a new mode of diagnosis of tuberculosis with tuberculin. Attached to a children's hospital, he had observed that if scarifications were made on the skin of tuberculous children and coating these over immediately with tuberculin, after twenty or thirty hours there would appear on the places so treated pustules which resembled those of vaccination. On the contrary, the same operation, carried on children exempt from tuberculosis, no eruption would follow. According to the Austrian doctor, this reaction would be less marked on adult carriers of tuberculous lesions than in children.

Prof. Vallée has made known the very interesting results that he has obtained in experimenting with about forty animals, either free or suffering with tuberculosis, and it seems very prob-

able that the method can be of general use in veterinary medicine, without saying anything at present of the importance that it may have in the prophylaxy of the disease. It is, however, necessary that a greater number of experiments should be carried out before deciding upon its general use. The application of the method is as follows:

(1) Select for the seat of the scarifications a region of the animal which it cannot reach with its teeth, horns or feet—the poll of the neck or the withers are possibly the best sites.

(2) Shave the spot, clean it minutiously and scarify it not too deeply, quarter of the thickness of the dermis. Too deep scarifications mean failure.

(3) With a small paint brush, such as one used for water coloring, dipped in a slightly diluted solution of pure tuberculin, paint the scarifications over. The dilution of the tuberculin has for object, to reduce the caustic action of the glycerine, conservating agent of the tuberculin.

In operating in this manner, Vallée has observed:

(1) That no papulæ will appear on subjects free from tuberculosis, except rarely a slight superficial inflammation, which subsides rapidly.

(2) That with tuberculous individuals, the alterations on the skin will appear only twenty-four hours after the operation, and a manifest cutaneous reaction appears. The skin, on each side of the scarifications, thickens and is infiltrated, forming a painful, gray-reddish ridge of varying thickness, according to the severity of the reaction. If the scarifications have been too close to each other, it produces a true patch of skin, œdematous without suppleness and very painful. This lesion is in full development from the thirty-sixth hour, is at its maxima towards the forty-eighth and still exists after four or five days. The scarifications become surrounded with the appearance of papules, which may be so intense that they look like the warty tuberculous eruptions of human skin. These lesions last several days and the cutaneous reaction has its demonstrative value for ten, fifteen or twenty days.

(3) Cuti-reaction does not occur in tuberculous subjects if the coat of tuberculin is put over the skin only irritated by the shaving of the hairs but not scarified.

(4) The cuti-reaction and that following hypodermic inoculation of tuberculin correspond to each other. Marked cuti-reactions are found in animals that react well with the test by cutaneous injections. In neither of the reactions does the intensity correspond to the severity or extent of the lesions existing.

(5) Cuti-reaction is not so well marked upon bovines which have received at the same time tuberculin by cutaneous injections and by scarifications.

(6) Bovines in full cuti-reaction since five days have given, on the contrary, splendid thermic reaction with the test by injections applied then to them.

(7) Tuberculous bovines seem to obtain a true accoutumancy to the cuti-reaction test, as it is necessary to permit several weeks to elapse between two successive operations to obtain a result.

Cuti-reaction offers to the experimenters a wide, unexplored field for the study of a new process for the diagnosis of various infections with the extracts of microbial cultures. Prof. Vallée has already realized in that direction interesting attempts concerning the diagnosis of glanders. Brute mallein applied, after dilution in its volume of boiled water, upon cutaneous scarifications on the neck of horses free from glanders gave no reaction, while applied on three glanderous horses it very rapidly was followed, in nine hours, by a local œdematous swelling, painful and well marked. But contrary to the cuti-reaction obtained with tuberculin, which lasts so long, with mallein it disappeared quite rapidly.

The question then remains open and can be studied by those who may have the chance of seeing many animals suffering with that disease.

VALUE OF ANTITETANIC SERUM.—The question of the application of serotherapy in the treatment of tetanus in man by the use of antitetanic serum has been the object of long discussions at the Société de Chirurgie in Paris. The opinions advanced varied very much. One of the celebrated surgeons of this city declared himself as a firmly convinced adversary of this mode of treatment. Another of no less reputation recorded several cases where the treatment had utterly failed. For another, although it was proved by statistics that the disease was comparatively rare, even then the fatal cases were as numerous as before. Finally, a few advocated the treatment.

The President of the Society resumed the discussions in dividing the members present into three classes: those that were advocates of the treatment, those that were sceptic and those that were opposed to it. The majority of surgeons will continue to make injections of serum, taking for ground that in ten recent cases of death the injections had not been made, and claiming that if they had the result might have been different. It was difficult to calculate the value of the treatment, unless the injections were made by the surgeon himself, otherwise there are no certainty that they ere given.

If, as it is claimed by some, veterinarians obtain good results, it may be because the serum used is taken from horses, and the question may be properly put if better results could not be gained in the treatment of tetanus in man if the serum of other animals than horses was used. The question is to be solved by investigations at Pasteur Institute, to which it has been referred.

It certainly will be interesting to know the answer from the Institute, and perhaps veterinarians may also get some positive statement in relation to the value of the antitetanic serum as a curative agent, so as to complete the valuable assistance that as a prophylactic it offers in our surgery.

* * *

VIRULENCY OF SALIVA OF RECOVERED RABIES.—A very important question has been raised by recent communications made

by Prof. Dr. Remlinger, Director of the Pasteur Institute of Constantinople, before the Société de Biology and the Société Centrale de Médecine Vétérinaire in Paris, communications which, while they yet embrace observations made only on experimental hydrophobia, may after further studies extend to a wider field and modify general sanitary regulations concerning clinical or street rabies.

Roux and Nocard have demonstrated that several days before the apparition of the first symptoms of rabies the saliva of dogs was already virulent. Dr. Remlinger calls the attention to a phenomena somewhat completely opposite, viz., the persistency of the virus in the saliva of a recovered animal. Of course, it is meant in cases of experimental hydrophobia.

It is already known that this form in dogs is susceptible of recovery. Several authors, and among them Dr. Remlinger, have published records which prove it. A new case is brought to sanction it. A street dog is inoculated on the 27th of September, 1906. Remains in perfect health until Oct. 23. On that day, rather sudden appearance of rabies with mixed manifestations, raging and paralytic, access of rage, tendency to bite, typical bitonal voice, paresis of the hind legs. After two days the first symptoms subside, but the paralytic phenomena are more marked. Paralysis of the four legs and of the muscles of the neck is more complete. A fatal prognosis is indicated. Yet, on the 25th of October, the paralysis diminishes and the dog, which for the last five days had eaten nothing, begins to drink. Improvement continues and on the 5th of November the animal can be considered as entirely recovered.

Every three or four days from the 30th of October to the 20th of November, a little ball of hydrophile wadding, moistened with sterilized water and held with a pressure forceps, has been carried in all directions within the mouth of the dog, and the saliva thus obtained has been inoculated into the muscles of the neck of guinea-pigs. With what results?

On October 30th two guinea-pigs are inoculated; one dies with rabies on November 28th. On November 4th two pigs

and a rabbit; one of the pigs dies of rabies on December 1st. On November 8th, of two pigs, one dies of rabies on January 10th. On November 13th, 15th, 20th, two, two and three guinea-pigs are inoculated, with negative results.

Conclusions derived from the above summary:

The dog had evidently rabies, as of the two guinea-pigs inoculated the 30th of October, one died with paralytic rabies 29 days after. The rabid virus has lasted in the saliva five days at least after the recovery, as one of the guinea-pigs inoculated with saliva obtained on the 10th and inoculated that day died with rabies 61 days after. It is very probable that five days is below the reality. Indeed, no inoculation was made on the 11th and 12th of November, say the 6th or 7th day after complete recovery, and one guinea-pig of those inoculated on the 13th died with doubtful causes.

Recovery of clinical rabies in dogs is not recognized by veterinarians, or at least has not been positively recorded. There are many reasons to believe that the two forms of varieties of the disease may after all act in the similar way to the point of view of the prognosis. And if so, there is but one step to accept the idea that street or clinical rabies is liable to recovery. Admitting it to be so, what will become of the principle generally adopted that a suspected dog can be relieved from observation if not dead after two or three days, and the possibility of its being still a great deal more dangerous animal with a saliva which can remain virulent, say, even *five* days, after his apparent recovery?

There is evidently a very important question rising from the discovery of Prof. Remlinger!

* * *

BIBLIOGRAPHY.—To the already long list of works that the "Encyclopædie Vétérinaire" possesses, another has just been added. "The Surgical Pathology of Joints of Domestic Animals" (La pathologie chirurgicale des articulations des animaux

domestiques). Prof. C. Cadéac is the author. The publishers, J. B. Baillière & Sons, 19 Rue Hautefeuille, in Paris.

With this work Prof. Cadéac keeps up the series of his undertaking. After having published the General Pathology, that of the foot, the surgical pathology of the skin and blood vessels, that of the tendons, muscles, nerves, each of which form a volume of great value and interest, and which it has been our pleasure to present to our readers in previous notices, he now publishes the Pathology of Joints. Printed and bound in the same form as its predecessors, this volume, in 18, contains 468 pages and has 148 illustrations. The contents are divided into three principal chapters:

(1) Diseases of the serous bursæ, with their traumatic lesions, the various wounds, the hygromas in general and according to seat.

(2) Diseases of tendinous sheaths, considering the various traumas and including synovitis and tendo-synovitis.

(3) Diseases of joints proper—sprains, luxations, articular bruises.

To each section the author has taken into consideration one apparatus after another, and he has made full description of the various affections as they presented themselves in order, the classification adopted being arranged according to anatomical order. As in his previous works, Prof. Cadéac has successively considered the diseases in a differential manner according to the various species of domestic animals—solipeds, ruminants and then dogs. In this way the description forms a pathology for each animal. This method, followed in all the books of the Encyclopædia, is certainly very advantageous, as it permits of an easy comparison of each animal.

There is no doubt that the work will command the attention of our *confrères* who read French, and it can be hoped that some good worker will undertake the task of its translation.

To complete these bibliographic notes, I must mention: From the Bureau of Animal Industry Bulletin No. 99, on the

"Danger from Tubercle Bacilli in the Environment of Tuberculous Cattle," a very interesting subject treated by E. C. Schroeder and W. E. Cotton; Bulletin No. 109, where Dr. G. B. Morse gives a valuable preliminary report on "Quail Disease in the United States"; Bulletin No. 110, giving the various "Methods of Eradicating Cattle Kicks," by Dr. L. A. Klein, illustrated. Dr. W. Reid Blair, of the New York Zoölogical Society, has sent me his illustrated report on "Actinomycosis in Black Mountain Sheep." From Dr. A. Peters I have the semi-annual report of the Cattle Bureau of Massachusetts. Finally, from Chicago, the "Bulletin of the Chicago Veterinary College" and the "Journal of the McKillip Veterinary College Alumni Association."

A. L.

MINNESOTA TO THE FRONT.

The conspicuous example of Pennsylvania Veterinarians in framing and securing the passage of wise laws governing animal diseases and safeguarding her live-stock interests, at the same time advancing the cause of veterinary education and practice, has drawn the attention of the whole country. While there is not a veterinary heart that does not throb with pride and pleasure at their splendid achievements, one of our esteemed collaborators, Dr. M. H. Reynolds, gives our readers elsewhere an interesting account of what Minnesota Veterinarians have done in recent years along similar lines, and proudly lays claim to first position among States in the wisdom and quality of its veterinary laws. The REVIEW welcomes this rivalry with enthusiasm, and would be glad to see it extend to every State in the Union.

Once the Empire State was the leader in all movements looking to the advancement of the veterinary cause. It was she who secured the first act recognizing the veterinary profession; her schools were once the criterions for all others to follow. But by an unwise and radical leap, she closed her career as a leader, and rapidly dropped to the extreme rear of the line of States in

which the profession has been legally recognized. While some States having fewer veterinarians than may be found in a single borough of New York City have a State Veterinarian in charge of the diseases of animals, the Empire State has none, and while its *laws* prohibit from practice veterinarians acceptable to such States as Minnesota and Pennsylvania, its *lack of laws* permits men to practice here who are debarred from every other State. Therefore while we applaud the grand achievements of the veterinarians who have done so well in other States, we draw particular attention to them at this time in the hope that their example may serve as an inspiration for the members of the New York State Veterinary Medical Society at its approaching meeting to make an earnest effort to regain the lost prestige of the Empire State.

LAST WORD BEFORE KANSAS CITY.

The August REVIEW gave its readers the full program of the great veterinary convention which will be called to order at Kansas City on the 10th of this month. Every prospect pleases for a gathering of veterinarians from all over the North American continent such as has never before been recorded, and which is destined to do a great service in extending the influence of the National organization, in ennobling the professional spirit, and in adding to the personal pleasure and profit of those who attend. Arrangements for the perfect working out of the splendid program are excellent and adequate, and the REVIEW offers its congratulations upon the promises which they portend for a glorious season of reason and relaxation.

The October REVIEW will contain an accurate and full account of all that transpires, so that those who are prevented from actual attendance may in a measure be recompensed for their great loss.

RECIPROCITY AMONG STATE EXAMINING BOARDS.

The story of "John Smith and His Misfortunes," which will be placed before the members of the A. V. M. A. at Kansas

City, is the recital of the obstacles which are encountered by a young graduate in veterinary medicine who wishes to locate in a profitable field to pursue his professional career, and, not finding it to his liking, seeks to change to another State, and, finally, not being adapted to private practice, endeavors to devote his talents to the service of the Government. While the hero of the story runs the gamut of all the difficulties that are likely to be encountered, the picture is not an impossible one, and it emphasizes the peculiar conditions which surround the young profession through the various State laws, debarring instead of inviting recruits of proper qualifications. It is commended to the Boards of Examiners, in the hope that a reciprocal understanding may be arrived at, whereby a graduate pronounced "right" by a reputable school, or a worthy Board, may have a passport to the professional guardians of every State in the Union.

VETERINARY GUARDIANSHIP IN NEW JERSEY.

A strong effort is being made in New Jersey to place all matters governing animal diseases and veterinary sanitary subjects with a bureau of animal industry under veterinary direction. The present system of dividing the responsibility among the Tuberculosis Commission, the State Board of Health, and the Department of Agriculture has proven inefficient. The proposition to place a veterinarian upon these various bodies as a compromise will be but a cheap makeshift and will not better conditions. They will be but a weak tail to a top-heavy kite, and the profession will be given credit for inefficiency through inability to accomplish any real reforms. Let the profession leave the responsibility where it is unless it can have a free hand.

THE man had just paid the veterinarian his bill. "Doctor, were you in the army?" "Oh, no; why do you ask?" "Well, I thought if you were, by the way you charged, the enemy would stand very little chance."

ORIGINAL ARTICLES.

THE PRACTICAL APPLICATION OF THE AGGLUTINATION METHOD FOR THE DIAGNOSIS OF GLANDERS.

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The rapid strides which have been made in comparative pathology and bacteriology during the past few years and the diligent efforts among scientific investigators to bring to the front better methods of diagnosis which are comprehensive, rapid and accurate have been fruitful in supplying the wants of the practical scientific man or practitioner. Probably the most valuable to the clinician of these recent methods of diagnosis has been the perfection of the agglutination test for glanders to such a degree that its successful practical application is assured. This method for diagnosing glanders is used officially in Austria and Prussia, and Schutz and Meissner in Germany have been the leaders in perfecting it.

It was in the summer of 1905 that Dr. V. A. Moore of this college saw the possibilities and advantages of the method and immediately began a series of investigations into its practical use. During the year 1905-6 the results of the investigations carried out under Dr. Moore's direction seemed so sure of success that Dr. George H. Berns, of Brooklyn, through the kind assistance of Dr. Moore, fitted up a laboratory at his hospital in that city and thus made possible the practical application of this method in a large city practice and in a district extensively infected with glanders. During July, August and September 317 specimens of blood from horses showing unmistakable symptoms of glanders, others which were slightly suspicious on account of a persistent elevation of temperature and other conditions, and from still others which had only been exposed to

the disease and presented no symptoms whatever were subjected to the agglutination test with very satisfactory results. Since this time the application of the method has been continued with equally satisfactory results and the total number of cases examined increased to approximately 1,600.

It is, therefore, on account of the successful application of this method from a practical standpoint that I wish to present to you in this article the method of procedure which was followed, some of the advantages and some of the disadvantages of the method, and some of the problems which presented themselves in our work.

A careful review of the article entitled "The Agglutination Method for the Diagnosis of Glanders" presented at the meeting of the American Veterinary Medical Association in September, 1906, and published in the *AMERICAN VETERINARY REVIEW* for October of the same year, by Dr. V. A. Moore and Drs. Taylor and Giltner, gives a very concise and comprehensive review of the literature and history of agglutination together with a clear account of the technique of the method. It, therefore, seems unnecessary in this article to give in detail the technique.

Since 1889 it has been known that the serum from immune individuals or those suffering from an attack of certain specific diseases would, in the proper dilutions, cause a clumping or an agglutination of the organisms causing that specific disease when brought into contact with them under favorable circumstances. Furthermore, it has been found that the serum from normal individuals possesses, in very low dilutions, an agglutinating power for certain microorganisms. It is upon the phenomena of agglutination and precipitation that this method of diagnosis is based, for it has been found that the serum of glandered horses causes a very characteristic agglutination and precipitation of suspensions of *Bacterium mallei* in much higher dilutions than normal, 1 to 800 or 1,000, and in certain instances in very high dilutions, 1 to 8,000, macroscopically. Investigations have shown that the sera of normal horses or those suffer-

ing from other diseases will agglutinate this organism in most instances in dilutions of 1 to 200 and in some instances 1 to 300, 1 to 400, and in rare cases 1 to 500.

The microscopical agglutination occurs in much higher dilutions than in the macroscopical and the former method is used in some laboratories; however, we are of the opinion that the macroscopical test is much more practical and constant and of exceedingly greater value in diagnostic work. It has even been found, by Dr. Taylor of this college, that when the test fluid is placed in the incubator without any serum being added whatever that it will agglutinate to a slight degree as shown microscopically. Therefore, when agglutination is spoken of in this article it will refer to macroscopical agglutination and precipitation only.

EQUIPMENT.

From a careful review of this method it will be observed that it is almost imperative that, for its successful application, the operator must know something of the principles of bacteriology and laboratory technique. During the past year a number of commercial institutions have brought forward various kinds of apparatus and agglutometers for this work which, in the hands of the more scientific and better trained veterinarians may be a success, have yet to be proved of value to the average veterinarian. We believe this test to be pre-eminently a laboratory method and whether that laboratory is located in a university, city board of health, or in a private hospital for its successful operation it needs a hand trained to a certain degree of proficiency in this class of work. The time may come when the veterinarians will be trained sufficiently along these lines to warrant their use of the method much more generally than at present. However, for the time being, it seems best to leave its application and the interpretation of results to those prepared for the work lest through mistakes and misjudgment on the part of the operator the method may come into disrepute and be unjustly criticized.

The equipment needed for a thorough application of this test is not extensive. In the laboratory fitted up at Dr. Berns' hospital there are the following: An incubator about 18 in. square and two feet high for growing cultures and keeping tests at the proper temperature; a centrifuge for separating the serum and the other parts of the blood; a water-bath for killing the cultures at 60 degrees centigrade; test tubes; graduates and pipettes. In addition to this there was an equipment for making cultures and doing the bacteriological work which has, however, since last fall been dispensed with and the test fluid sent from this laboratory. The absolutely necessary equipment, therefore, is an incubator, test fluid, test tubes, graduates and a pipette (1 c.c. graduated to hundredths). Gas connection is desirable, but, if not possible, other means for maintaining an even temperature must be supplied. Running water is almost indispensable. The incubator need not be expensive and the size will vary with the amount of work to be done. The test fluid may be supplied from some laboratory. A 10 c.c. and a 60 c.c. graduate are very convenient sizes and the tubes should be about $\frac{1}{2}$ x 6 in. and of a clear glass.

Test Fluid.—This is prepared by washing off the growth of a two-day agar culture with a sterile platinum loop into a solution of distilled water containing .85% sodium chloride and .5% carbolic acid. This suspension is then placed in a thermostat or water-bath at 60 degrees centigrade for two hours which kills the bacteria. It is then strained through sterile cotton and diluted with the carbolized salt solution until it is of a faintly cloudy appearance. The proper dilution of this suspension can only be determined by experience.

In connection with this test fluid or suspension it has been taken for granted that the culture must be passed through a guinea-pig about once in three weeks to maintain its agglutinating power and the fluid must be made up fresh when used. Therefore, the following questions presented themselves:

- a. What generation of the culture is the best to use?

b. How can the agglutinating power of the culture be prolonged?

c. How long can a good reacting fluid be preserved?

Experience has shown that the second, third or fourth generations of the culture are best for making the suspension, and that if the number of generations are not increased and a stock culture of the second or third generation is used to make the cultures from which the suspension is prepared that the agglutinating power is prolonged from three or four weeks to as many months, thus obviating the necessity of frequently passing the culture through a guinea-pig. By this method of procedure the test fluid is always of the same generation and the power of agglutination not inhibited by an increase in the number of generations grown on artificial media. This, however, it is assumed has its limitations and the exact length of time that a culture will continue to agglutinate is yet to be determined.

In regard to the length of time that a good reacting fluid will continue to react several experiments have been made. Test fluid has been prepared at short intervals during the past year and found to react well. It was then kept under varying conditions, mostly at room temperature, and all tested with a good reacting serum, thirty-two samples in all, at one time. The following table gives a summary of the results:

TABLE SHOWING THE REACTIONS OF TEST FLUIDS OF DIFFERENT AGES WITH A GOOD REACTING SERUM.

(Tested April 17, 1907.)

No.	Date of preparation.	Conditions of preservation.	Reaction.
1	May 2, 1906	Ice box.....	I—800
2	Oct. 5.	“ “.....	I—1200
3	5.	Room temperature.....	I—1200
4	18.	“ “.....	I—1200
5	19.	“ “.....	I—1200
6	22.	“ “.....	I—1200
7	Nov. 7.	“ “.....	I—1200
8	10.	“ “.....	I—1200
9	10.	“ “.....	I—1200
10	12.	“ “.....	I—1200

No.	Date of preparation.	Conditions of preservation.	Reaction.
11	Nov. 16, 1906	Room temperature	1—1200
12	23,	" "	1—1200
13	30,	" "	1—1200
14	Jan. 7, 1907	" "	1—1200
15	9,	" "	1—1200
16	14,	" "	1—1200
17	14,	" "	1—1200
18	17,	" "	1—1200
19	17,	" "	1—1200
20	19,	" (new culture 2d gen.)	1—1200
21	21,	" " " 3d "	1—1200
22	30,	" " " " "	1—1200
23	Feb. 3,	" " " " "	1—1200
24	12,	" " " " "	1—1200
25	18,	" " " " "	1—1200
26	Mar. 5,	" " " " "	1—1200
27	6,	" " " 2d "	1—1200
28	16,	" " " " "	1—1200
29	21,	" " " " "	1—1200
30	Apr. 3,	" " " " "	1—1200
31	7,	" " " " "	1—1200
32	12,	" " " " "	1—1200

From the above table it will be seen that all the samples except No. 1 reacted in dilution of 1 to 1,200. No. 1 gave a strong reaction at 1 to 800 after it had been prepared a year and would probably have gone higher, but the limited amount prevented testing it in higher dilutions. We would, therefore, conclude that a good reacting fluid will continue to react for at least a year, when kept under favorable conditions, thus much increasing the practical value of the test, and obviating the necessity of making a new fluid at frequent intervals.

PROCURING THE BLOOD.

In procuring the blood from a small number of horses the task is comparatively easy and simple. However, when samples are to be taken from stables of 50 or 100 horses and the time is limited and it must be done at some time of the day when the horses are not at work, the task assumes quite considerable proportions. A definite method of procedure, therefore, must be followed to be advantageous to all parties concerned.

In drawing the blood from such a stable of horses the most convenient time is at night just as they are coming in from

work or in the evening. About three men are necessary to assist, two to lead out the animals, and one, usually the foreman, to keep the record, give the number or name of the animal and any history of the case worthy of note. As the horses are led out the attendant sponges the neck over the jugular vein with a carbolic solution and leads the animal up to the operator. He is examined for symptoms of glanders; viz., ulcers in the nostrils, swollen submaxillary glands, chorded lymphatics, farcy buds, temperature and any other external appearances worthy of note. The jugular is then compressed and a large hypodermic needle introduced and about an ounce of blood drawn into a clean sterile bottle which is labeled by number or name of the animal. The next horse is then led up and the same procedure followed out. In this manner there is always a horse ready and the operation is very simple and really requires very little time. Blood from 25 or 30 horses can in this way be drawn in an hour. The apparatus necessary is two pails of carbolic solution, about 3%, a vial of pure carbolic acid, bottles (straight wide mouth being preferable) and two large saline or hypodermic needles.

In drawing blood from a stable of horses where there are known to be a number of glandered animals the possible infection of healthy animals by careless and uncleanly methods is believed by the writer to be very great and is an offense which is unnecessary, unpardonable and very unscientific. To avoid this it is necessary to thoroughly wash the animal's neck at the seat of operation with a good disinfectant, have the needles in the bottle of pure carbolic and before using them wash them in the weak solution so as not to cauterize the tissues at the point of puncture or injure the operator's hands. In this way there is a needle in the pure carbolic all the time and by alternating the needles they become thoroughly disinfected and thus obviate the possibility of accidental infection.

The following table will serve to illustrate this point. Samples of blood from a stable of 32 horses were sent to the hospital from another veterinarian to be tested. Within 12 and

19 days three horses, Nos. 11, 18 and 21, which had previously reacted 1 to 200 broke out with symptoms of acute glanders and reacted on a second test 1 to 800. Thirty-two days later four more animals, Nos. 5, 13, 15 and 17, which had previously reacted 1 to 200 reacted 1 to 800. Four of these cases, Nos. 5, 11, 18 and 21, followed animals which had reacted 1 to 800 and the blood was drawn from the healthy animals after samples had been taken from the diseased individuals. To the writer this point seems to be of great importance and should be carefully guarded against lest through such needless infection of apparently healthy animals this method be unjustly criticized and the veterinarian severely reprimanded.

TABLE NO. 2.

<i>No.</i>	<i>Date and reaction. Feb. 24, 07.</i>	<i>Date and reaction. Mar. 8, 07.</i>	<i>Date and reaction. Mar. 28, 07.</i>
1.....	1—200	.....	1—200
2.....	1—500	.....	1—800
3.....	1—500	.....	1—500
4.....	1—800	.....	1—800
5.....	1—200	.....	1—800
6.....	1—200	.....	1—200
7.....	1—200	.....	1—200
8.....	1—500	.....	1—200
9.....	1—800	.....	.....
10.....	1—200	.....	1—200
11.....	1—200	1—800 (Mar. 15)	.....
12.....	1—200	.....	1—200
13.....	1—200	.....	1—800
14.....	1—200	.....	1—200
15.....	1—200	.....	1—800
16.....	1—200	.....	1—200
17.....	1—800	.....	1—500
18.....	1—200	1—800	.....
19.....	1—200	.....	1—200
20.....	1—500	.....	1—500
21.....	1—200	1—800	.....
22.....	1—500	.....	1—200
23.....	1—500	.....	1—800
24.....	1—200	.....	.....
25.....	1—500	.....	1—500
26.....	1—200	.....	.....
27.....	1—200	.....	1—800
28.....	1—500	.....	1—800
29.....	1—200	.....	1—200
30.....	1—200	.....	.....
31.....	1—200	.....	1—200
32.....	1—200	.....	1—200

After the blood is drawn if the containers are kept in an upright position and allowed to stand for a few hours the clot forms and the serum is expressed and is an absolutely clear supernatant fluid. In such conditions the centrifuge is not needed and the serum can be decanted and diluted 1 to 40 after which it is ready for the test.

MAKING THE TEST.

The details of the test were followed out as described in Dr. Moore's article previously referred to. Three cubic centimeters of test fluid are placed in each of three tubes and .6 c.c. of diluted serum placed in one, .24 c.c. in a second, and .15 c.c. in a third, making a series of dilutions 1 to 200, 1 to 500 and 1 to 800. These dilutions it is believed are sufficient for practical work and are considered as follows: 1 to 200 normal, 1 to 500 suspicious, and 1 to 800 the animal is considered glandered.

REACTION AND INTERPRETATION OF RESULTS.

The reaction shows a layer of agglutinated bacteria covering the entire convexity of the bottom of the tube. This film-like sediment may become so dense that it rolls in at the periphery. The test fluid becomes clear in the lower dilutions and in cases of a strong reacting serum it may become clear in all the tubes. From twenty-four to thirty-six hours are allowed for a reaction to take place, but if it does not appear in twenty-four hours it is believed that the animal is not very heavily infected. The reaction occurs best in the incubator at about 37 degrees centigrade. However, we have had strong reactions occur in four or five hours at room temperature in dilutions of 1 to 800. In these cases the animals were heavily infected and no test was needed to make a diagnosis of glanders.

A negative result shows a small, round, concentrated spot or "button" of organisms in the center of the convexity of the tube and the test fluid remains apparently unchanged. This occurs usually in dilutions of 1 to 500 and 1 to 800 as there will usually be a reaction in the 1 to 200 tube.

The correct interpretation of results in a test of this kind is a matter which requires considerable experience and practice. The different degrees in the intensity of the reaction is quite important in deciding between the different dilutions to which a serum will react as the gradation between the reaction at one dilution and another is not always clearly defined or definite. We are of the opinion that a horse reacting 1 to 500 is very suspicious and should be retested in a short time and kept under close observation. The reason for this is that in our experience with this test we have had a number of horses which reacted 1 to 500 on the primary test and in a short time either broke out showing unmistakable symptoms of glanders or in a subsequent test reacted 1 to 800. Accordingly we strongly urge that all "500" horses be placed by themselves, put under treatment, worked together and carefully watched.

From these facts we are inclined to conclude that this test will in many cases, to a certain degree at least, give us a cue to the degree of infection. For it is believed that an animal whose system is saturated with *Bact. mallei* and its products will react in higher dilutions than one in which the lesions are more localized.

Accordingly we have come to regard those animals reacting in proportion of 1 to 500 as very suspicious and should be placed under treatment and careful observation.

TREATMENT.

In all cases where glanders was found to exist in a stable the entire stable was tested, the reacting animals separated from the non-reacting and the stable thoroughly cleaned and disinfected. The reacting animals were placed in quarters by themselves, examined very thoroughly for symptoms of glanders, and if none were found they were mated into pairs and put to work. These animals received 2 drachms of potassium iodide in their drinking water in the morning and a half an ounce of Fowler's Solution in their drinking water at night. They were carefully examined physically once a week.

In all cases where the above treatment was carefully carried out the results were very satisfactory. Some animals ceased to react and others reacted higher on subsequent tests and we were in this way able to determine the condition of the animals and thus minimize the possibility of spreading the infection.

REVIEW OF CASES.

It is not possible nor practical at this time to give a review of all the cases examined as the data is not at hand and a more complete report will appear later. However, there are a few cases which seem worthy of note.

One of these was a roan mare about eight years old, weighing about 1,050 lbs. and in fair condition. She was kept in a clean but poorly lighted stable and showed no marked symptoms of glanders. On the first visit she showed increased respirations, loss of strength and condition and a persistent temperature of 102° F. which would not yield to treatment. A sample of blood was taken and it reacted strongly in eight hours 1 to 800. The mare was brought to the hospital, destroyed, and a post-mortem examination made which revealed most typical lesions of pulmonary glanders.

A number of other such cases were observed which at the time of testing reacted 1 to 500 or 1 to 800 and showed no symptoms of glanders, but later presented marked symptoms of this disease and were destroyed. From these cases we have come to the conclusion that this method is of great value in picking out cases of occult glanders.

Another interesting case was that of a large dun-colored gelding weighing about 1,300 lbs. and presenting extensive symptoms of farcy. The blood from this animal reacted in 10 hours in proportion of 1 to 8,000. In another case received this past winter which presented extensive lesions of cutaneous glanders the blood also reacted in proportion of 1 to 8,000. Numerous other cases of farcy have been examined and in every instance the reaction has been prompt and strong and has occurred in high dilutions.

From these cases we are inclined to conclude that the blood from cases of farcy reacts in much higher dilutions than that from cases of more localized infection.

ADVANTAGES OF THE METHOD.

The advantages of this method of diagnosing glanders over some of the others are quite numerous.

To the busy practitioner the fact that this method requires very little time in its operation is a very important factor. When horses are tested with mallein it requires from 36 to 48 hours before a thorough careful test is completed and most all of this time is consumed in taking temperatures and injecting the mallein, etc. By this method when everything is in readiness it requires only a few minutes to make a test and oftentimes results can be obtained in six or eight hours. It is, therefore, rapid and time saving. A stable of fifty horses can be tested in four or five hours of actual work.

A rise of temperature seems to have no effect on the efficiency of the test, whereas under such conditions it is not advisable to resort to malleinization.

The animals are not prevented from working and thus no time is lost from their general service as in the application of the mallein test. The horse need not be taken out of his harness to draw an ounce of blood.

Many times in the application of the mallein test owners will accuse a veterinarian, as in the tuberculin test, of injecting something into the animal's system detrimental to its general health, thus injuring the horse in some way. In this method of diagnosis there are no accusations of this kind, there are no local swellings and no systemic disturbances.

In cases of occult glanders this method serves admirably in detecting them. These may be the cases which are dangerous to the health of the other animals in the stable and may be the spreaders of the disease. Thus by a very easy and practical means we are able to isolate the reactors and in so doing protect the uninfected from this possible source of infection. Further-

more in a large city where a considerable percentage of the horses are infected with glanders and where outside infection from public drinking troughs, hitching-posts and the like is common, this method is exceptionally valuable in keeping a check on the general health of a stable in much the same manner as tuberculin serves as a check in the control of tuberculosis in a herd.

The results we have obtained have been fully as satisfactory as any obtained with mallein and we believe the efficiency to be equally as good, if not greater in many cases, as in the application of that diagnostic agent.

The writer would lay special stress on the strict observance of cleanliness and thorough disinfection in drawing the blood. It is imperative that a careful and intelligent interpretation of results be made, especially in those cases reacting 1 to 500, as these are the most important of all and unless symptoms of glanders are present these should be held for a subsequent test. Finally it is necessary that the operator of this method have at least a general training in laboratory work and technique.

It is believed that in this method of diagnosing glanders we have one which is more rapid, practical and oftentimes more efficient than any other yet devised.

The writer desires at this time to acknowledge his indebtedness and express his thanks to Dr. V. A. Moore and Dr. Geo. H. Berns, through whose valuable suggestions and assistance this work was made possible.

THREE NEW STATE VETERINARY COLLEGES will soon be opened for students, viz.: Illinois, as a department of the University of Illinois, at Chicago; Colorado, as a department of the Colorado Agricultural College, at Fort Collins; Michigan, as a department of the Michigan Agricultural College, at Lansing. Besides, the Ontario Veterinary College, in 1908, will become a Government school, and will be entirely reorganized upon a university basis. Surely the tendency in veterinary educational matters is upward. It behooves the profession to so harmonize existing conditions that the benefits may be reaped from these exceptional opportunities.

CONCREMENTS.

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Concrements are abnormal accumulations of organic or inorganic substance derived from the tissues and deposited in the cavities of hollow organs of the animal body. They may be conveniently classified as inorganic concrements or calculi, and organic concrements.

1. Calculi are mineral concrements, a result of accumulation in the body cavities of precipitates from the body fluids or they may be incrustations upon foreign substances in the body cavities. The mineral deposits formed within the tissues of the animal body, as calcified tubercles, etc., are calcareous infiltrations, calcification or tissue petrification. However, calculi may, and frequently do, become attached to the tissue surrounding them (phleboliths), and a calcified tissue may become separated from the surrounding structures (calcified necrotic tissue in fistula), so the two conditions, calculi formation and calcification, approximate each other closely and at times are not separable.

The cause of calculi formation is not thoroughly understood. The most probable cause is the supersaturation of the body fluids with salines. The fluids may become supersaturated either by an excessive production of the salines or diminished excretion of them. The lack of oxygen or an excess of carbon dioxide may cause the precipitation in body fluids, especially of calcium and magnesium carbonates. Fermentation of the various juices may result in precipitation of a variety of compounds. But why the precipitate should accumulate as a calculus is unexplained, it is a phenomenon not understood. There are many predisposing causes that aid in the formation of calculi.

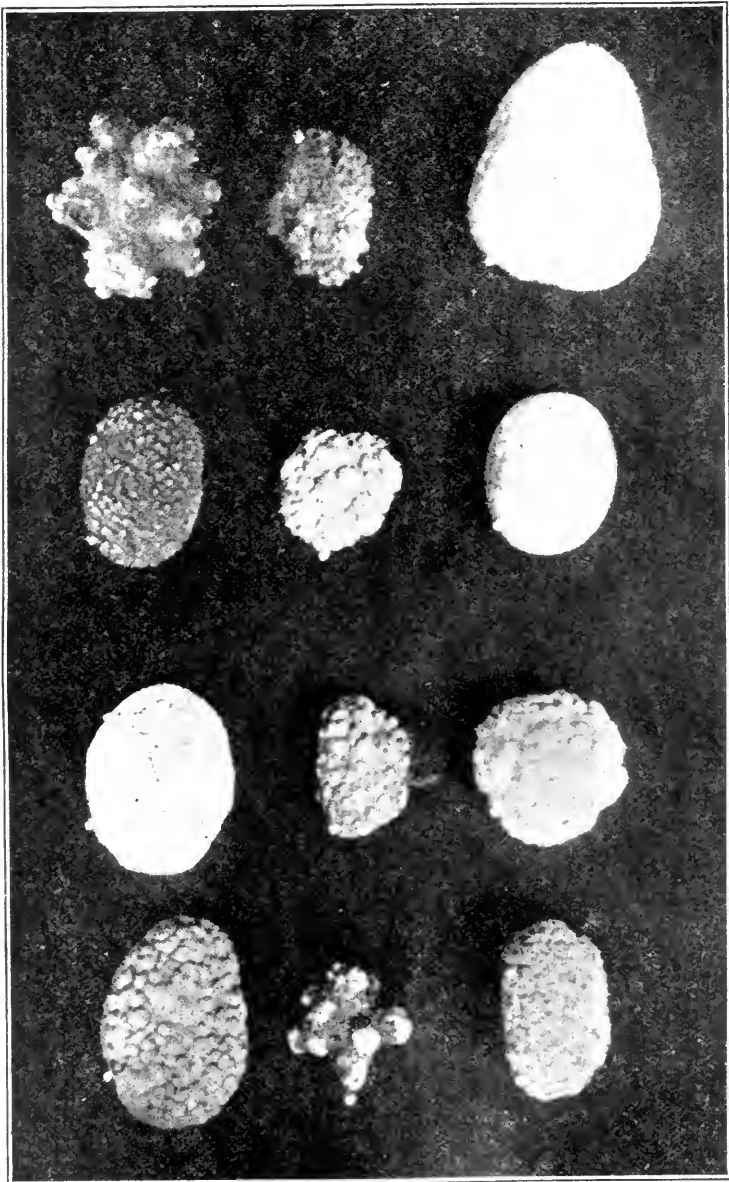


FIG. 1.—Cystic Calculi, Showing Variable Shapes

The retention or delay in the excretion of fluids, especially if they undergo any chemical change, are principal factors in their formation. Intoxication from mercury predisposes to the formation of urinary calculi. The presence of any foreign body, as particles of sand, desquamated cells, coagulated albumen, parasites, etc., upon which a precipitate is accrued is a predisposing cause. "All calculi have an organic nucleus upon which is



CUT II.—Cystic Calculus from Jack.

deposited the precipitate" (Zeigler). But it seems possible and quite probable that particles of inorganic matter are deposited upon it in the formation of calculi as well as organic.

The structure of calculi varies. Homogeneous calculi are composed of layer upon layer of the same material and have

the same appearance throughout. Heterologous calculi are laminated, *i.e.*, they are composed of layers of different material and appear different in the succeeding layers. (Figure 3, Cut IV.)* They vary from finely granular masses, appearing as though many grains of sand had been fused into a mass (Cut 1); to lobulated masses (mulberry calculi) (Cut 1); or are smooth masses appearing as though they were molten mineral run into forms (Cut 1).



CUT III.—Salivary Calculus, Showing Organic Nucleus.

Calculi assume all conceivable shapes. Cystic calculi vary in form from spheres to jack straws (Cut 1), and even coral-like bodies or stalactite calculi have been observed. Their form may be determined by the location of formation; thus renal calculi may assume the shape of the renal tubules, renal pelvic calculi the shape of the renal pelvis. Intestinal calculi are usually more or less spherical in shape. Salivary calculi are ovoid.

* Photographs by Dr. A. L. Hunt.

Calculi may be faceted when occurring in large numbers (Figure 1 and 2, Cut VI.).

The size of calculi varies from the finest sand-like grains (Figure 2, Cut V.) to enormous accumulations. Cut 2 represents a 228-gram cystic calculus removed from a Jack, by Dr. McCasey, Concordia, Kansas. A 260-gram cystic calculus was removed from a five-year-old Jack at the Missouri Valley Veterinary Association clinic in February, 1907. A salivary calculus in Stenos duct weighing 125 grams was removed in 1906 by Dr. Z. C. Boyd.

The number of calculi occurring in one animal is quite variable. There has been a case reported in which there was over 300 cystic calculi in one dog, although that is an unusual number.

The color of calculi is determined by their composition. Thus biliary calculi are highly colored because of the bile pigment, bilirubin and biliverdin, that they contain. Enteroliths are usually colored from the intestinal contents. Arterioliths and phleboliths are colored with haemaglobin or some of its derivatives. Urinary calculi may be gray, brown, yellow, or even red, depending upon their composition. Salivary calculi may be chalk white or tinted with various colors.

A variety of chemical compounds are found in the various calculi. Urinary calculi may contain cystin, xanthin, urates, oxalates, carbonates, phosphates, calcium, magnesium, etc. Cystin and xanthin urinary calculi are quite rare. Urates are common in renal tubular calculi, also cystic calculi of dogs and cats. Carbonates predominate in cystic calculi of the horse and ox. Ammonium magnesium phosphate is the principal compound in cystic calculi of the sheep and hog. Urethral calculi are of the same composition as cystic calculi of the same animal. Preputial calculi are usually composed of carbonates in the horse and of phosphates in the ox and sheep. Biliary calculi may be composed of carbonates or phosphates, but are more frequently composed of calcium biliverdin. Enteroliths may con-

tain a large nucleus of fecal matter or hair which becomes permeated and incrustated with calcium or magnesium carbonates, phosphates, sulphates or oxalates. Salivary calculi, arterioliths, and phleboliths are usually composed of the carbonates and phosphates of calcium and magnesium. Lacteal calculi are composed chiefly of phosphates.

Urinary Calculi are of frequent occurrence and may be conveniently classified according to the location in which they



CUT IV.—Fig. 1. Renal Calculi from Steer.

Fig. 2. Preputial Calculus, Hog.

Fig. 3. Preputial Calculus Showing Lamination.

occur, 1. Renal tubular calculi are most common in dogs and cats, but may occur in horses, cattle and hogs. (Figure I, Cut IV.) After formation they frequently pass into the pelvis of the kidney and the urine may wash them down through the ureter into the bladder and sometimes on out of the animal body. They may obstruct the tubule causing retention of urine with distention of the tubule and frequently cyst formation. 2. Renai

pelvic calculi are not rare, the pelvis of the kidney sometimes being completely filled with a calculus. This variety has been observed in the hog, dog, cat, horse, and sheep, the frequency in the different animals being in the order named. Figure 1, Cut V. represents a 7-gram renal pelvic calculus that was obtained in 1906 from a horse used for dissection purposes at the Kansas City Veterinary College. G. H. Woolridge, of Dublin, describes a case of renal pelvic calculi in a horse (*Veterinary Journal* for June, 1907). The entire kidney was practically replaced by calculi. The results of calculi in the renal pelvis depends upon their extent, complete obstruction necessarily results in the retention of urine followed either by its resorption or accumulation forming a cystic kidney. The former condition is common in dogs, the latter in hogs. 3. Ureter calculi have been observed, but are rare. 4. Cystic or vesical calculi are the most common of all urinary concretions. Dogs and cats are quite subject to them, occurring more frequently in the older animals, but the puppy and kitten are not exempt. Bitches and castrated male cats are especially subject to cystic calculi. Jacks are frequently affected with cystic calculi, horses, goats, sheep and cattle are less frequently affected with them. Cystic calculi may cause no inconvenience, or they may produce sufficient irritation to establish a severe cystitis. They may obstruct the urethral opening resulting in retention of urine and rupture of the bladder. Frequently they become embedded in the walls of the bladder and may cause dilatation or pouching of its walls. Sometimes the calculi pass out of the bladder and become lodged in the urethra, resulting in retention of urine, difficult micturition, and usually in urethritis. 5. Urethral calculi are common in old dogs, also in the bull and ram, and have been observed in the horse. They occur in the urethra, in the beginning of the gutter of the os penis in the dog, usually in the first curve of the penis in the bull, just posterior to the meatus urinaris in the ram and in the ischial arch in the horse. They usually cause difficulty in micturating and may completely obstruct the urethra with the same results that is

produced by occluding the urethral opening of the bladder. About 200 urethral calculi were observed in the urethra of one steer by Dr. B. F. Kaupp. Figure 2, Cut V., represents three urethral calculi from a steer. 6. Preputial calculi sometimes occur in geldings, although these concretions are more frequently an accumulation of the secretion from the adjacent sebaceous glands. W. Williams reported cases in which there was formation of stalactite bodies in the prepuce of oxen and



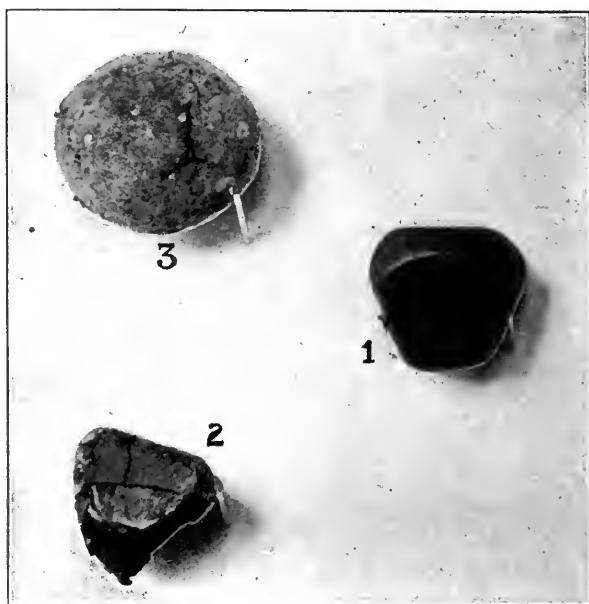
Cut V.—Fig. 1. Renal Pelvic Calculus, Horse.

Fig. 2. Urethral Calculi.

sheep that had been fed food material containing a large percent. of phosphates. A preputial calculus weighing 11 grams and another weighing 10 grams were obtained from a hog by a veterinary inspector. (See Cut IV., Figures 2 and 3.)

Salivary Calculi occur most frequently in the horse, although they do occur in the ass, ox and sheep. Their formation depends upon the ingested water containing a large quantity of carbonates of potassium, sodium and magnesium and the presence of

calcium salts in the saliva. Dr. J. M. Lawrence, Veterinarian U. S. Army, Fort Wingate, N. M., operated upon two horses April 6, 1907, removing from Steno's duct in each a salivary calculus. Cut 3 represents one of these calculi, in the center of which is located an oat grain (nucleus) upon which the deposit took place. This calculus weighs 19 grams. The result of



CUT VI.—Biliary Calculi, Ox.

Fig. 1. Showing Facets.

Fig. 2. Showing Facets and Lamination.

Fig. 3. Showing Crevice.

these calculi is to obstruct the outflow of saliva, the retention of which in the smaller ducts may cause inflammatory, degenerative, or atrophic changes in the gland, and if the calculi are not removed the destruction of the gland or the rupture of the duct and a salivary fistula. Tartar on dogs' teeth has a similar origin to salivary calculi.

Gastric Calculi are rather rare, occurring sometimes in the paunches or reticuli of cattle, sheep or goats. They are excep-

tionally rare in the horse and hog and probably never occur in dogs and cats.

Intestinal Calculi or enteroliths are found in the large intestine of the horse, especially those fed upon bran. These calculi are composed primarily of ammonio-magnesium phosphate, the magnesium phosphate being dissolved out of the bran by the acid of the gastric juice and unites with nascent ammonium forming an almost insoluble phosphate. Enteroliths may be of enormous size in some cases weighing as much as ten kilograms. These calculi are likely to cause erosions of the m.m. as well as obstructing the lumen of the intestine. Linch, of Albany, N.Y., reported a case in the *Review*, 1906, in which a calculus weighing 3.4 kilograms was found. Gage reported a case in which a calculus weighing .9 kilogram produced fatal results. Hodgkins and Son, of Hanley, England, recently obtained three enteroliths weighing 1.6 kilograms from the intestine of a horse.

Biliary Calculi (Cholelithiasis) are not rare in the domestic animals. They vary from the size of a pea to a baseball, are tinted yellow, brown, red, green, or may be chalk white in color. Frequently they occur in large numbers, are variable in shape and structure. They are usually composed of biliary pigments in combination with calcium, although carbonate and phosphates are common ingredients. Biliary calculi may form in the biliary collecting tubules in the gall bladder or in the bile duct. The results of their presence depends upon the location and size of them. If they are small and cause no obstruction there will be no inconvenience from them. If they are of a size that they can be forced through the bile ducts they will produce severe colicky pains at the time of passage. They may be sufficiently large to obstruct the bile duct or some principal collecting tubule and produce a stagnation and resorption of bile, and digestive disturbance may also be present because of the diminished quantity of bile in the intestinal canal. Cut VI. shows a group of three biliary calculi from an ox. They show lamination, also contact with other calculi by the presence of facets. Figure 2, Cut VI.)



Cut VII.—Hair Balls, Ox; Natural Size.

Lacteal Calculi may be formed in the galactophorous sinuses, especially of the ox. They are usually composed of calcium phosphate.

Phleboliths or calculi in veins have been observed by Spooner in abdominal veins and by Simmonds in the jugular vein. They are probably the result of calcification of thrombi which later become detached from the vessel walls and are true calculi. They produce an obstruction in the vessels in which they occur. They may be of slight significance or may terminate fatally, depending upon the importance of the vessel and the extent of the collateral circulation or anastomosis. These calculi are usually composed of calcium compounds.

Arterioliths are calculi formed in arteries. Their cause, formation, composition, and termination being practically the same as phleboliths.

2. *Organic Concrements* are accumulations of organic material in the cavities of the hollow organs, their effects being practically the same as the effects of calculi is the reason for their description here. The cause of their formation depends upon the collection and massing together of organic substances derived either from the body in which the concrements occur or from some extraneous source. They may be homogeneous or heterogeneous in structure; oval, spherical, or angular and faceted in shape; variable in size, number and color. They may be composed of hair, mucous, fecal matter, casein, inspissated pus or bile, ingesta of various kinds, etc.

Hair Balls are accumulations of hair into masses. They occur most frequently in animals that lick themselves as the ox and deer. Other animals are affected as the hog, dog and cat, also man, especially barbers, hair-sorters, hair-dressers, etc. Cut VII. represents two hair balls from an ox. They vary in size from a pigeon's egg to a basket ball. They are in some cases simply masses of hair, in others they are impregnated and incrustated with mineral substances giving them the appearance of calculi. Hair balls incrustated with mineral salts taken from the

deer by someone's grandfather or great-grandfather is the ordinary "mad-stone" in use at the present time. Recently a hair ball (bristles) completely filling the stomach of a hog was obtained from a hog slaughtered in a Kansas City packing-house. Hair balls are usually found in the abomasum or large intestine of the ox and in the stomach or large intestine of the hog. The presence of a hair ball produces the same effects that would be produced by any other indigestible body of the same size in the same location.

Fecal Concrements.—The intestinal contents may accumulate into compact masses. These concrements interfere with the movement of foodstuff through the canal and may completely obstruct it. Appendicitis in the human is frequently a result of a fecal concrement. These concrements occur most frequently in the horse, dog and cat. They are usually composed of cellulose in the horse, of bones and bone fragments in the dog and cat. The large intestine is the usual location of them in the horse and the small intestine in the dog or cat. Maxwell reported a case in which alfalfa accumulated in the large intestine of a horse—the concrements being from 7 to 9 inches in diameter. The results of fecal concrements depend upon either mechanical interference in the passage of intestinal contents, erosion of the intestinal mucous membrane or perforation of the intestinal wall, or a combination of two or more of the above.

Inspissated Bile.—If the outflow of bile is obstructed it will become condensed or inspissated depending upon the length of time of obstruction. Inspissation of bile frequently occurs. The animals most frequently affected are the ox and hog. An ox liver, containing several concrements composed of inspissated bile in the interlobular ducts, was presented to the Kansas City Veterinary College by Dr. Bugbee. The inspissated bile may form masses which in general appearance resemble biliary calculi. It is sometimes impossible to differentiate biliary calculi from inspissated bile and in fact the calculi are frequently of secondary formation, the inspissated bile forming the nucleus. The

results of inspissated bile depend first upon the resorption of bile into the system and second upon the absence of bile in the intestine.

Inspissated Pus.—Empyema sometimes terminates, when there is no surgical interference, in resorption of the liquor puris after which the solid constituents frequently mass together, forming concretions. Cut VIII. shows two inspissated pus concretions removed from the guttural pouch of a horse. These concretions may form in any cavity in which the sup-



CUT VIII.—Fig. 1. Inspissated Pus.
Fig. 2. Guttural Pouch, Horse.

uration is slow going or chronic provided the movement of the part is limited. After formation they may become calcified. They are of little importance except as a pathologic phenomenon.

Lacteal Concrements result from the coagulation of the casein of the milk and its accumulation in the galactophorous sinuses. These concretions occur in the cow and can usually be expelled through the lacteal duct by manipulations.

Ceruminous concretions occur in animals in which the hair or wool extends far into the external auditory meatus. They are composed of cerumen and are the result of an excessive production or limited excretion of it. This may form into sufficient masses to completely occlude the external auditory meatus and thus interfere with hearing. Concretions have been found in the bronchial tubes. Their formation depends upon the condensation and accumulation of mucous or purulent fluid. They may obstruct bronchioles and produce atelectasis.

Prostatic concretions frequently occur in old dogs. They are present in many of the enlarged prostate glands. They consist of masses of accumulated colloid-like material. The results depend upon the pressure upon the urethra causing an obstruction to the outflow of urine.

The description of the surgical relief of calculi has been purposely omitted hoping it will be supplied by some of our able surgeons.

PARIS AUTOMOBILE DEALERS, according to the New York *Herald*, are loudly complaining that the season of 1907 has been the worst yet known for the sale of machines. Several things are blamed for the present situation—the stock market, the late season, and obvious overproduction.

NINETY SIX JERSEYS BRING \$91,000—WORLD'S PRICE RECORD.—*Coopersburg, Penn., July 18.*—T. S. Cooper, importer and breeder of Jersey cattle, sold a herd of ninety-six cows to Col. A. B. Lewis, of New York and Fredericksburg, Va., to-day, for \$91,000 spot cash. It is said that this is the world's record private sale of Jerseys. This sale surpasses the average realized at Cooper's Memorial Day sale, when 114 head netted \$93,950. At that sale Col. Lewis bought imported Stockwell, the king of the herd, for \$11,500. While negotiating to-day's sale Col. Lewis offered \$59,000 for ten additional animals, but Mr. Cooper refused to part with them. He also declined \$20,000 and \$15,000 respectively for two bulls, \$15,000 for a star cow, and refused to take \$27,000 for nine cows that had been picked out. It is said that the herd purchased was bought by a syndicate and there is a rumor that the ninety-six head will go on Thomas F. Ryan's estate in Virginia.

TUBERCULOSIS—BACILLUS NECROPHORUS— ANO-VULVITIS.

REPORT OF THE COMMITTEE ON DISEASES OF THE IOWA VETERINARY ASSOCIATION.

BY MEMBERS OF COMMITTEE: R. R. DYKSTRA, CHAIRMAN; J. W. GRIFFITH
AND J. D. STILLWELL.

Your Committee on Diseases begs leave to submit the following report, which you will find is in the nature of a review of the work being accomplished by scientists in the laboratory and in actual practice, and is not the result of original research work by members of the committee.

We were as usual handicapped to a large extent by lack of time, which is required to get up a report of this character creditably, but trust that the members of the Association will be as indulgent with us as it has been with former committees.

The first subject taken up by the Committee, and the one which we consider of the utmost importance is tuberculosis.

This is one of the most ancient diseases affecting animals. It was referred to by people of earlier times as the "great white plague" on account of the emaciated and anæmic condition of the patients. It was up to 1882, in which year Dr. Robert Koch discovered the specific organism causing the disease, supposed to be directly transmitted from parent to offspring. Since that time it has, however, been amply demonstrated that this is not the case, but that young of consumptive parents are peculiarly predisposed to the disease and on account of the intimacy or closeness of contact existing between them they are more liable to contract it.

We find that there are certain localities which are entirely free from the disease, as, for instance, in the island of Jersey. This freedom is said to be due to the fact that there have been no importations of cattle or other animals from countries where tuberculosis exists.

In the United States, however, the disease is quite prevalent, though not nearly as large a percentage of our domestic animals are affected as in Europe. In fact, authorities claim that in some of our Western States it is practically unknown. Nevertheless, it cannot be denied that tuberculosis is gradually spreading, as is evidenced by reports from the various abattoirs.

The organism causing tuberculosis is known as the *Bacterium tuberculosis*, and not as the *Bacillus tuberculosis*, because all rod-shaped, non-motile bacteria are now placed in the former classification.

There is a question in the minds of a good many investigators whether the organism causing human and bovine tuberculosis are identical and whether the disease can be transmitted from cattle to man. This doubt originated largely from the fact that Koch in 1901 expressed it as his belief that the disease was not the same, because he had been unable to cause tuberculosis in cattle by injecting them with the human *Bacterium tuberculosis*. This was probably an error, because it is to be supposed that tubercle bacteria taken from man will increase in virulence when passed through a large number of cattle. In fact, in an experiment conducted by the Bureau of Animal Industry, it was demonstrated in the first place that the tubercle bacteria of children is more virulent than that of adults, and, second, that the organism taken from four children affected with generalized tuberculosis and injected subcutaneously into calves produced in two of them generalized tuberculosis, in which the lesions were quite as severe as those produced by a fresh culture of the bovine tubercle bacterium which was isolated from a case of natural tuberculosis in a cow.

The symptoms are too well known to merit any particular mention in this report, but the phase of the question which interests us particularly, and one which should be given the most careful and thoughtful consideration, is the methods which may be adopted for the prevention of its further spread and propagation, both from animal to man and from animal to animal.

Let us take up first the method of transmission from animal to man. It is a well-known fact that animals suffering from tuberculosis of the mammary gland will give off *Bacterium tuberculosis*, but this organism is also frequently found in milk cows which do not have the udder affected but are suffering from some other form of the disease, either localized or generalized, so that an absence of tubercular mastitis is not evidence that the *Bacterium tuberculosis* is absent in the milk. Knowing this to be the case and also that bovine tuberculosis can be transmitted to humans by the ingestion of such milk, its use should be prohibited. It has been advocated to pasteurize the milk of all animals used for human consumption by subjecting it to high temperature, but the use of such milk produces in children and calves a form of diarrhoea which cannot be controlled during the use of pasteurized product.

The use of formaldehyde in milk in the proportion of one to ten thousand or one to forty thousand has also been experimented with, and while this was found to be an excellent remedy to control dysentery in calves, it does not make the milk from tuberculous cattle absolutely safe. In fact, a mixture of the above strength does not destroy the *Bacterium tuberculosis*, but merely inhibits the decomposition of the milk with the subsequent destruction of the antibodies.

The second phase of the question we are considering is the prevention of the spread of tuberculosis from one animal to another. The accomplishment of the preceding has been attempted in two ways:

1. By isolation or destruction of diseased animals.
2. By immunization of healthy animals.

Since the discovery of tuberculin by Koch, which is a glycerine extract of the germ of tuberculosis, we have been able to positively discover tuberculosis in animals before they manifest any of the physical symptoms of the disease. This discovery in itself is very important, and, while it does not come up to Koch's expectations, because it was his belief that he had

found a cure for tuberculosis, still it is of inestimable value, because by its use we can put into practice the various methods of isolation. The principal one of these, and the one which has been followed with the most notable results, is the one advocated by Prof. Bang. Briefly, it consists of the following: Upon application by the stock-owners, the state will test all animals free of charge and even pay a small indemnity for animals killed on account of advanced tuberculosis. In return the owner agrees to keep the reacting and non-reacting animals in separate enclosures with separate attendants and utensils for each herd.

The milk of the reacting herd is sterilized before being consumed either by man, calves, pigs or any other animals, or in the manufacture of butter or cheese.

The quarantined herd is kept under Government supervision and cannot be disposed of without authority from the Government. When they are to be slaughtered this is done under the supervision of the Government and the beef disposed of according to the conditions found.

In Pennsylvania practically the same method has been adopted except that the milk of reacting cattle is sterilized before being sold or the reacting animals are destroyed, at the option of the owner, who is indemnified by the State.

Both these methods have greatly reduced the number of tuberculosis animals in the States where the method was tried and are worthy of commendation.

The other method consists in the immunization of animals before they become tubercular. The most that can be said for them is that they are still in the experimental stage, notwithstanding the claims made for them by their discoverers.

Tuberculin has been experimented with by various authorities. Its value as an immunizing agent is practically nil, because not in any case in which it has been used with this object in view has it conferred any degree of immunity. One of the most noted of these experimenters, Prof. McFadyean, proceed-

ed as follows: Three heifers were used. One of these received 18 injections of tuberculin, the doses varying from 1 c.c. to 20 c.c. Thirteen days after the last injection the animal was given an intravenous injection of 2 c.c. of a liquid rich in the *Bacterium tuberculosis*, "prepared by rubbing up some caseo-purulent matter from the mesenteric gland of a horse with sterile water." The remaining two animals did not receive any tuberculin, but received in a similar manner a like quantity of the same liquid charged with the live organisms as No. 1. Cases No. 2 and 3 later became ill and were killed. On post-mortem their lungs were found to contain many tubercles, and the mediastinal and bronchial lymph glands were enlarged and caseating. Animal No. 1 after receiving the intravenous injection of the *Bacterium tuberculosis* received several injections of tuberculin. It responded to the first of these doses, but subsequently failed to respond to larger doses. A few months later she was killed and a very minute post-mortem examination was made, with the result that the only lesion found was a completely calcified tubercle about the size of a pea in one of the mesenteric glands. The experimenter assumed that this animal had acquired quite a high degree of immunity.

Another experiment conducted along practically the same lines by McFadyean led him to suppose that the animals experimented upon had been rendered immune as no physical signs of tuberculosis were noticeable, and at the time of reporting the animals were fat and did not react to tuberculin.

"The danger of reaching any conclusion in such cases in the absence of a post-mortem examination is strikingly illustrated by the subsequent history of these animals, for, although two of them appeared in perfect health, and the third in good health, all of them died of tuberculosis within eight months from the time the report was made." In this country Pearson and Gilliland have been experimenting along the same lines, in addition to which they have attempted to immunize cattle by giving them intravenous injections of sputum cultures of tu-

berculosis bacteria not virulent for cattle. After receiving several of these injections they, in common with control animals, were inoculated with virulent bovine tubercle bacteria. Upon post-mortem examination the vaccinated animals were practically free from any lesions, while both controls gave evidence of a general infection.

The latest method of immunization is that advocated and discovered by Prof. von Behring. It is termed bovovaccination, and the preparation used is known as Bovovaccine. This consists of the dried human *Tubercle bacterium*, derived from a culture tested very carefully as to its effects upon cattle. This is injected intravenously. Cattle free from any epizootical disease and preferably not older than two weeks to three months are chosen. Animals of this age do not have to be previously tested with tuberculin, even if they are derived from a notoriously tuberculous herd. Two injections are made at an interval of at least twelve weeks. It is claimed that these injections are absolutely harmless if the technique of the operation is carefully carried out, and that "animals immunized by this method will probably remain so for all their life-time." But with experiences dating back only three to four years, nothing definite can of course be said as to whether this holds good, also to extraordinary conditions, for instance, in great danger of infection. But under general conditions immunized calves will remain immune all their lifetime.

It is readily understood from the foregoing that prevention of tuberculosis by immunization is still in the experimental stage, and that it is yet too early to arrive at any definite conclusions. And as long as this state of uncertainty exists and we have at hand an agent by means of which tuberculosis can be positively identified, it is no more than reasonable that the milk sold for consumption or used in the manufacture of butter or cheese (for the *Tubercle bacterium* is also found in these products) should be derived only from cattle which have been tested and failed to react and do not show any physical signs of tuberculosis.

In regard to the suppression of tuberculosis in our domestic animals, the system adopted in Pennsylvania seems to offer the best method for its successful eradication, while it at the same time does not cause hardship in any quarter.

BACILLUS NECROPHORUS.

The second section of our report consists of a discussion of the *Bacillus necrophorus* and its importance from an economical standpoint.

The most general and able discussion of this subject is that submitted by Dr. John R. Mohler and Geo. Byron Morse, and from their report we have copied extensively, including, however, reports of some cases noticed in Iowa.

The organism was first described by Löffler, and its relation to the various necrotic diseases of animals demonstrated by him. In 1884 he investigated an outbreak of calf-diphtheria and proved that the *Bacillus necrophorus* is the causative agent.

To Bang belongs the honor of having demonstrated that the *Bacillus necrophorus* is a normal inhabitant of the healthy intestine of the hog. He was not so successful in attempting to discover it in the digestive tract of cattle. It is also found in manure and consequently in soil which comes in contact with it.

This organism is described as being a pleomorphic one, varying in shape according to the character of the media, and also its age having considerable influence on the shape. It has been described as varying from a coccoid form to that of filament over 100 M. in length and from 0.75 M. to 1.5 M. in width. The filamentous forms are generally beaded and matted together. Motility has been advanced as a characteristic by one investigator, but the majority of authorities have failed to find this. It can be stained in the ordinary method, very brilliant effects being obtained with fuchsin. It does not take Gram's stain. The cultivation of the organism is not easy. It is an absolute anaërobe.

The influence of several germicidal agents was demonstrated experimentally by exposing the *Bacillus necrophorus* to their

action in varying strengths, and it was found that after a two-minute exposure to a 2% phenol solution no growth occurred. An exposure of 9 minutes was necessary in the case of a 1-2000 bichloride solution, and 13 minutes for a 2½% solution to destroy the organism. The odor emitted by the organism is very pungent and described as resembling that given off by old cheese and glue. The fact that it gives off a toxin is evidenced (1) by the sudden death without premonitory symptoms, (2) by the cadaveric rigidity, which is promoted by the presence of toxins in the blood, and (3) by the study of the pathologic histology.

In regard to the establishment of an acquired immunity we may state that the experiments carried out are not extensive enough to be able to determine positively whether any kind of an immunity can be conferred.

The organism causes a coagulation necrosis with subsequent caseation and characterized by a malignant tendency to invade the whole body. It spreads in three ways: (1) by a progressive advance into the surrounding tissue, (2) invasion by metastasis, and (3) by general intoxication.

The local lesion is described as a sharply circumscribed patch of yellowish or dull brown, sometimes greenish, white homogeneous, structureless, dry, crumbly tissue, debris of soft cheesy consistency, resembling compressed yeast, and manifesting a characteristic stench that might be described as a compound of the odors of old cheese and glue.

Necrobacillosis occurs only as a result of inoculation, that is the specific cause enters the animal's body through some abraded surface or impaired tissue.

Various diseases starting as simple inflammatory processes caused by the action of irritants, as for instance, thermal or chemical are increased in severity by the entrance of the *Bacillus necrophorus*. Pressure from harness or any other contusion, bruise or wound frequently becomes almost malignant in nature due to the entrance of the necrosis bacillus. It has been found in some of the more severe forms of scratches and several inves-

tigators have demonstrated its presence in cartilaginous quittor. In the digestive tract it causes necrobacillosis which by extension involves the peritoneum causing peritonitis.

Believing that the organism is a normal inhabitant of the intestines of calves and that they only await the action of some irritant in order to set up their baneful influence, Jensen fed healthy calves with irritant drugs and had the satisfaction of seeing them sicken and die with white scour. The organism being afterwards recovered from the blood. One observer even claims that it is common with *Bacillus typhosus*, the cause of typhoid fever, and that some helminth produces the abrasion in the intestinal mucosa.

Necrotic stomatitis, necrotic ano-vulvitis, necrotic vaginitis, necrotic metritis and foot-rot of cattle are all induced by the *Bacillus necrophorus*. In some instances the infection being so intense as to involve neighboring structures, setting up a general infection or septicæmia, which terminates fatally. In the purulent material obtained from the joints of calves and foals suffering from joint-ill, Mettam isolated the *Bacillus necrophorus*.

Examinations conducted by the Veterinary Division at Ames have demonstrated the presence of the organism in various forms of dermatitis of hogs. In one outbreak occurring on a farm near Red Oak, several hogs were affected, the necrotic process being confined to the frontal region.

A few days ago a sample of pork taken from a hog near Webster City was sent in by a veterinarian. These specimens showed numerous small pus pockets, which were at first supposed to be tubercular, but a microscopic examination revealed the presence of the *Bacillus necrophorus*.

A cow belonging to the College herd became sickly soon after an easy delivery. The cachexia became more profound, the animal strained almost continuously, and finally became so weak that she died.

The symptoms indicated a disturbed condition of the genitals, and a post-mortem examination confirmed the diagnosis of

metritis previously made, the uterus being highly inflamed and showing numerous necrotic areas. These later when subjected to a microscopic examination revealed the *Bacillus necrophorus* in large numbers.

Numerous other cases could be cited, but lack of time and space forbid. Enough has, however, been given to indicate the widespread and destructive influence of the *Bacillus necrophorus*.

The prophylaxis depends of course upon particular form of necrobacillosis to be prevented. Absolute cleanliness and thorough disinfection of all parts which may afford a point of entrance for the organism should at all times be enforced.

Joint-ill can be prevented by disinfecting the umbilicus. Necrotic stomatitis by a thorough disinfection of the mouth at the time of eruption of the first teeth. Since most domesticated animals are liable to infection they should be kept away from the diseased ones or from any place where these latter have been kept, without first thoroughly disinfecting the place.

Therapeutics consist in the use of any of the various antiseptics, in strength used in the treatment of ordinary wounds. Even simple exposure to the influence of the air by the removal of the necrotic masses, should have a beneficial effect, since the organism is an absolute anærobe; however, this latter should not be depended upon alone.

The fact that the various forms of disease caused by the *Bacillus necrophorus* are of an enzoötic character instead of epizoötic leads us to conclude that its control lies largely in the effort exerted by the individual members of the veterinary profession.

AN OUTBREAK OF ANO-VULVITIS.

Report by DR. JOHN D. STILLWELL.

During the month of January, 1906, I was summoned to the farm of Wm. Ginger, a prosperous farmer residing three miles east of Paullina, O'Brien County, Iowa, to investigate a disease which had appeared among his cattle a short time previous. On my arrival I found a herd of about seventy-five cattle

including heifers, steers and milch cows, mostly grades, and ranging in age from yearlings to six or seven-year-old cows. The steers number about twenty-five.

History—Owner stated that about one week previous he had noticed a yearling heifer whose external genital organs were raw and bleeding, but as he expressed it, he thought that the hogs had “got to her” and gave the matter no further thought. In the course of a day or two he noticed that several others, including one of the older milch cows, were affected with some disease which seemed to attach the external genitals only, and was confined to the females of the herd. From this time the disease spread rapidly to other members of the herd. On examination the entire herd with the exception of the steers was found to be affected, showing the disease at various stages.

No new members had been added to the herd for some time, nor had the present members been allowed to mingle with other cattle.

Symptoms and Lesions—In most cases the disease manifested itself primarily by a slight tumefaction of the labia near the inferior commissure of the vulva. This was gradually increased in size until in many cases it would become as large as a hen’s egg. In the center of this swelling a small ulcer would form, discharging a serous exudate rapidly forming into a thin brownish colored scab, becoming thicker with age. There was only a slight discharge of pus at any stage of the disease.

From this point of infection small fissures would appear, radiating from the central ulcer and giving the lesion a somewhat stellate form.

In advanced cases these fissures would reach a length of from one to two inches and a depth of about one-half an inch. Portions of tissue lying between these fissures would slough away, leaving a very angry looking wound. In several cases, principally those first affected, the entire labiæ had sloughed off. In the milder cases the crusts forming over the ulcers would become quite thick and when removed would leave a bleeding

surface. The mucous membrane of the vulva and vagina was highly congested, ranging in color from bright red to purple, and showed numerous ulcers, ranging in size from that of a pin-head to a pea.

The milder cases showed no constitutional symptoms. In the severe cases, however, there was a slight elevation of temperature, loss of appetite, dullness and constipation.

Treatment—This consisted in thoroughly washing the tail, anus and vulva with a 5% solution of creolin once daily. Under this treatment the ulcers healed rapidly, the progress of the disease was entirely checked, improvement being noticeable after the first two or three days. The milder cases required but four or five applications on successive days. The more severe cases received treatment once daily until recovery was almost complete, the most pronounced cases not receiving over ten days' treatment. Although a few animals were slightly disfigured, recovery was complete.

In this case only the females were affected, the steers showing no symptoms of the disease at any time. Age seemed to have very little influence on the course of the disease, or in the animals affected, young and old, from yearlings to old milch cows alike being attacked.

This curious affection is recorded as having prevailed in the winter of 1897-98 in different localities in Iowa, Missouri, Kansas and Nebraska. In 1900 and 1901 it was again reported in different parts of Iowa.

Etiology—The specific agent causing this disease has been given as the *Bacillus necrophorus*. Its appearance in isolated herds, which have no communication with other herds, and even in young cattle on a farm to the exclusion of the older ones, seems to suggest an enzoötic origin.

In an outbreak in Kansas the young heifers suffered, while the steers of the same age and old milch cows escaped.

A case is on record in this State where a bull from a healthy herd broke into an affected herd and served several

cows, afterwards being returned to his own herd and serving cows there, but did not communicate the disease. No case is on record showing a bull to have contracted ulcers of the penis or sheath after having served affected cows.

While in most cases the steers escape the disease, it is not always confined to the females. During an outbreak near Shelby, Iowa, eight out of twenty-two steers suffered. In all cases reported the outbreak has occurred during the cooler months and in most cases while the animals were confined in muddy yards.

The prompt recovery under antiseptic treatment indicates that no mere chemical poison maintains the destructive process, and leads us to believe in common with Mohler in the presence of a microbic agent as the causative factor. In regard to treatment, other agents such as Phenol 3-100, Mercuric chloride 1-500, or 1-1000 have been used with good results. Beneficial results are also obtained by touching the ulcers with silver nitrate.

OBSERVING FRIEND: "Your cow does not chew her cud. Yes, she is very sick." Scientific Farmer: "Impossible! She needs no cud. I feed her on pre-digested hay."

"WHAT is the cause of your cows being so thin?" "They are superstitious. They will eat only four-leafed clover."

"TEXAS FEVER AND THE CATTLE TICK" is the title of Bulletin No. 6 of the Department of Agriculture of Cuba, and is the work of Dr. Nelson S. Mayo, Vice-Director of the Department of Animal Industry. The Bulletin is published both in Spanish and English, and is well and profusely illustrated, showing the tick and its eggs, animals affected with the disease, and the various steps in immunization, together with specimen immunized cattle on the farm of the Estacion Central Agromomica at Santiago de las Vegas. Dr. Mayo's work in Cuba has reflected much credit upon the veterinary profession, and it is a great pity that Cuba is in such an unsettled condition, as it greatly interferes with the progress of the work. If the Cubans ever settle down to peace and prosperity, they will reap great benefits in their live stock industry through the work which Dr. Mayo has done.

RESEARCH ON PROF. VON BEHRING'S BOVOVACCINE.

BY DR. WILFRED LELLMANN, PROFESSOR AT N. Y. UNIVERSITY.

It cannot be denied that von Behring's method of immunization against bovine tuberculosis has drawn the keenest attention of the entire civilized world. Ever since von Behring made known his first results of experimental work—on which he had been working silently for some years—quite a few scientific and practical men have been taking up immunization work on smaller or larger scales, according to their facilities. It can hardly surprise us, when we meet with contradictory statements as for the results of immunization; such is always the case with any new method of treatment. It should be remembered that the method in question has been at the mercy of the most trying circumstances, as in many cases gross offence has been committed against the rules of vaccination laid down by von Behring. I personally convinced myself on several occasions, where the principal rules were grossly neglected, and the success was accordingly.

I have made several hundred vaccinations and am satisfied to state, the bovovaccination, when done properly, is an absolutely harmless procedure.

Following I shall repeat the principal rules about using Bovovaccine:

The best age for vaccination is between three weeks and three months. Older animals are better submitted to the tuberculin test before being vaccinated. Sickly-looking calves and not in the best state of health are positively to be rejected.

The vaccine, which represents a yellowish-looking powder consisting of dried cultures of human tubercule bacilli (attenuated), is to be mixed thoroughly with the necessary amount of sterilized water. Before injecting the vaccine into the jugular

vein, the emulsion must be well shaken and certainly kept warm enough, as close to blood temperature as possible.

After the hair has been removed at the point where the injection is to be made, the skin should be well disinfected; the needle must always be sterilized thoroughly. After having introduced the needle into the jugular vein, the vaccine must be injected very slowly and under steady pressure. Furthermore, it is very important, not to excite the animal before, during and after the vaccination.

After each injection it is good practice to disinfect the skin once more and also rinse out the needle with 1% sterilized salt solution.

Two vaccinations are to be performed on each animal, the second three months after the first.

The first injection consists of one unit, equal to 0.004 gr. of the dried culture, suspended in 2 c.c. of sterilized water; the second vaccination of 5 units, equal to 0.02 gr. of the culture, suspended in 10 c.c. of sterilized water.

From the time of the first vaccination until three to four months after the second, the vaccinated animals should be kept strictly isolated and under the best sanitary conditions obtainable. I personally have been experimenting with a number of calves for nearly three years, and, although my work is not finished, yet I should like to publish in short the results of my experimental work so far accomplished.

No. 1.—Calf, two weeks old, vaccinated hypodermically, end of December, 1904. Second vaccination, end of March, 1905 (subcutan.). This calf got a third injection intravenously end of March, 1906 (5 units). Shortly before the third vaccination it was tested with tuberculin, no reaction. During July and September, 1906, each time fed with about 5 cgr. of a virulent culture of bovine tubercule bacilli. During February, 1907, again tested with tuberculin. No reaction.

No. 2.—Bull calf, two to three weeks old. Two intravenous vaccinations, the first beginning of January, 1905, the second

three months later. This animal was artificially infected (intravenously) with 1 cgr. of a highly virulent culture of bovine bacilli. This animal showed a local swelling at the point of injection, about two weeks after infection. In March, 1906, tested with tuberculin, showed a doubtful reaction ten hours after injection, with a temperature of 104.5, which, however, came down to normal inside of two hours. During the summer and fall of 1906 this animal was fed three times with virulent cultures. The first and the second time he got each time about 5 cgr. of a culture; the third time, during end of September, two-thirds of a virulent culture. During February, 1907, the animal was tested with tuberculin, but showed no reaction. Beginning of May the bull developed three abscesses at the neck and on the shoulder, which were located superficially. The pus of these abscesses was microscopically examined, but no tubercle bacilli could be found. The condition of the animal has always been good and the state of nutrition was good up to the 27th of May, on which day he was killed. The post-mortem revealed the presence of two or three little tubercles in the bronchial glands, which, however, appeared of normal size. The tubercles had undergone calcification. Outside of these lesions, I found a periproctal abscess, in the pus of which no tubercle bacilli could be traced.

No. 3.—Control calf of about the same age as No. 2. This calf was artificially infected simultaneously and with the same amount of the same culture (intravenously). It succumbed to infection after 26 days. On holding post-mortem, I found the lungs and the regionary lymphatic glands studded with innumerable tubercles, varying in size from a pinhead to a small lentil. Before infection the animal was tested with tuberculin and showed no reaction.

No. 4.—Control bull of about the same age as No. 2. During summer, 1906, this animal was fed twice of the same culture as No. 2 and each time with about 5 cgr. The third feeding took place end of September, 1906, together with No. 2. This time I gave one-third of an entire culture to the control

animal, and the two-thirds of the same culture to the vaccinated bull, as stated above. During February, 1907, this control animal was tested with tuberculin and showed typical reaction. This bull was very much emaciated. On May 25th the animal was destroyed, and, on holding a post-mortem, I found innumerable caseated tubercles, principally in the right lobe of the liver; these nodules varying from the size of a lentil to that of a pea. I also found tuberculosis of the mesenteric glands; furthermore, there were some tubercles in the lungs and bronchial glands.

No. 5 and No. 6.—Two calves, each two to three weeks old. They got their first vaccination in April, 1905, and the second three months later. During end of November, 1905, these calves were infected artificially into the jugular vein; the one getting 1 cgr. of a virulent culture, the other 2 cgr. of the same culture. Together with these two vaccinated calves, I infected two non-vaccinated calves with the same quantity of the same culture and in the same way (*i. e.*, one of the control calves got 1 cgr. and the other 2 cgr. of the same culture). The control calf which got 2 cgr. died six weeks after infection. On holding post-mortem, the lungs and the bronchial glands showed plenty of tubercles (miliary). The two vaccinated calves and the other control calf were killed in January, 1906. The post-mortem proved the two vaccinated calves absolutely free from tuberculosis, while the second control calf showed quite a number of tubercles in the lungs and the regionary lymphatic glands.

No. 9 and No. 10.—Two bull calves, each about three weeks old. They got their first vaccination beginning of March, 1906. Three months after vaccination, they were exposed to natural infection by being in direct contact with a highly tubercular cow for nearly four months. During this time they were confined with the cow in an old barn with exceedingly poor sanitary conditions. During end of June these two bull calves, which are both pictures of health, were tested with tuberculin and showed no reaction.

This series of experiments proves the immunizing power of Bovovaccine. Artificial infection, through the jugular vein as

well as through the digestive tract, proved the vaccinated animals to be well immunized from four months until nearly two years after vaccination. Considering the fact that I made the infections with unusually large quantities of virulent cultures, the post-mortems demonstrated that the resistance of the vaccinated animals against infection was remarkable. Calf No. 2 gives us an instance of what a high degree of immunity an animal is apt to acquire after bovovaccination; for the quantities of tubercle bacilli with which this animal was infected, I suppose, would have been sufficient to destroy at least ten to twenty animals.

As I stated above, my experimental work is still going on, and in due time I shall continue my publications.

A PESSIMISTIC CORRESPONDENT of the *Veterinary Journal* (London), complaining of the overcrowding of the veterinary profession upon the British Isles, has caused the editor to look up the statistics, and the following facts are shown: In 1905-6 the number of new graduates exceeded the deaths by only five (80 to 75). The aggregate for the past four years shows an excess of 34 graduates over deaths (314 to 280), or an average of about 8 per year.

"THE IMPORTANCE OF MEAT AND DAIRY INSPECTION" was the subject which Dr. W. H. Dalrymple, Veterinarian of the Louisiana State University, handled at a Conference of Health Boards recently. It has been published in pamphlet form, and makes a powerful argument for the importance and necessity of competent veterinary supervision of these products. It is modestly illustrated, though the cuts are of such practical value that they greatly assist in making the text plain and appealing. Dr. Dalrymple, being a prominent figure in comparative medicine in the South, is in great demand where health subjects are discussed, and as his audiences usually consist of leading physicians, health authorities, and intelligent stockmen, the good he accomplishes for the veterinary profession cannot be overestimated. He always holds the veterinary banner on high, and his hearers are brought to a higher realization of the wonderful possibilities of the veterinarian as a sanitarian. A Dalrymple in every community would be a blessing to human as well as veterinary medicine.

MODERN VETERINARY METHODS.

BY WALTER J. TAYLOR, D. V. M., ITHACA, N. Y.

IMMUNITY.

EXPLANATION OF ACQUIRED IMMUNITY.

Ehrlich's Side-Chain Theory.

II.—*Bacterial Immunity.*—The theory concerning bacterial immunity as described by Ehrlich, is the direct result of a series of investigations and experiments carried on by different investigators some time previous to the establishment of his "side-chain theory." In order that a better understanding may be had of the terminology and the application of this theory in relation to bacterial immunity, a short résumé of experiments leading up to the formulation of such a theory is appended.

In 1898 Belfanti and Carbone showed that if horses were injected with the red blood-cells of rabbits, the serum thereafter obtained from the horses would have acquired an appreciable toxicity for rabbits. Shortly after this Bordet published a very interesting series of experiments in which he showed that the serum of guinea pigs after these had been injected several times with 3 to 5 c.c. of defibrinated rabbit's blood acquired the property to dissolve rapidly and intensely, in a test tube, the red blood cells of a rabbit; whereas the serum of a normal guinea pig is incapable of doing this, or does it only in a slight degree. Bordet further showed that this action is a specific one, that is, the serum of animals treated with rabbit blood acquires this dissolving property

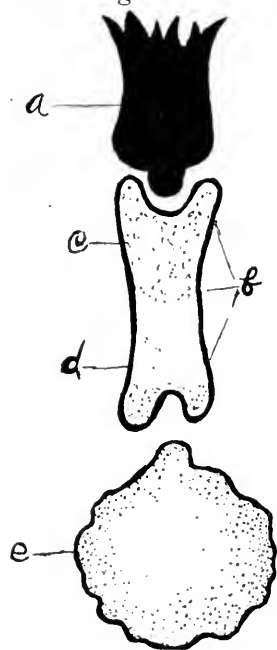


Fig. 1. Drawing showing the action of the amboceptor; *a*, alexin or complement; *b*, amboceptor with, *c*, toxophorous, and *d*, haptophorous combining group of atoms; *e*, cell upon which complement acts. After Ehrlich.

only for the red blood of rabbits, and not for those of any other species of animal. For other species, the serum of an animal thus

treated is no more strongly solvent than the serum of a normal untreated animal. Later, this same property was shown for the sera of all animals treated with the serum of another species. The term given to this phenomena was hæmolysis, and the substances which affect the solution of the red cells, hæmolysins or hæmotoxins.

Bordet now turned to a further study of the action of hæmolysins, and was able to show that the solvent power of the specific hæmolysins depended on the combined action of the two constituents of the specific serum. When the fresh hæmolytic serum was heated for half an hour at 55° C., it lost its power. If to this *inactive serum* a very small amount of the serum of a normal guinea pig was added, the full hæmolytic power was restored to this inactive serum. In other words, it had been *re-activated* by this addition. This experiment demonstrated conclusively that the hæmolytic action of the specific hæmolytic serum depends upon two substances. One of these is able to withstand heating to 55° C., and is contained only in the specific serum. The other is destroyed by heating to 55° C. and is contained not only in the specific hæmolytic serum, but also in the serum of normal untreated animals.

Previous to this work Buchner had shown that there were constituents of the normal blood serum which were actively destructive to corpuscular elements, bacteria, and other cells with which they came in contact. These substances had been termed *alexins* by Buchner. This term was retained by Bordet to designate that constituent of normal serum which did not withstand heating to 55° C. and which was one of the factors in the hæmolytic process. The other substance which was found only in the specific serum and which withstood heating to 55° C., Bordet termed *substance sensibilatrice*. According to Bordet, therefore, the substances required for hæmolysis are the substance sensibilatrice of the specific hæmolytic serum and the alexin which exists even in normal serum.

This specifically increased solvent action for foreign corpuscular elements on the part of sera of animals previously treated with the same, could not fail to be of the greatest interest to bacteriologists; for a most surprising similarity showed itself between this and the well-known facts of artificial immunity against bacteria as worked out by R. Pfeiffer.

In 1889 Pfeiffer found that by injecting simultaneously into the peritoneal cavity either a lethal dose of cholera vibrio and

serum from an immune animal or injecting the vibrio into an immune animal, the organisms lose motility, become spherical and then undergo granular degeneration and finally disappear, while the animal remains well. This reaction constitutes what is known as Pfeiffer's phenomenon.

In the above experiment we see clearly demonstrated the similarity of reaction produced by the solvent power of the blood serum of an animal for the corpuscles of the blood of another species with which the blood of the first species has been treated, and the solvent power of the blood of an animal for a particular species of infecting organism after that animal has been immunized against that organism, or is treated with the blood of an immunized animal. As already stated, the reaction observed in the first case is called hæmolysis, that of the second *bacteriolysis*. This process, as shown by Pfeiffer, is a specific one, *i.e.*, the serum of an animal treated with the cholera organism transmits an increased solvent power for that organism only and not for any other species of bacteria. Out of this experiment, as demonstrated by Pfeiffer, has grown the simultaneous method of vaccination for the production of immunity.

Ehrlich, in his application of the "side chain theory" to bacterial immunity, was able to demonstrate that the reaction depended upon two substances, the one having an affinity for the bacterial cell and corresponding to the *substance sensibilatrice* of Bordet and which was present only in the immune serum, the other a substance present in all normal sera and corresponding to the alexin of Buchner. To the first Ehrlich has applied the term *immune body* or *amboceptor* and to the latter he has given the name *complement* in order to express the idea that this body completes the action of the amboceptor. He was further able to show that the amboceptor had two combining groups of atoms. One of these groups has affinities only for the bacterial cells and to which he gave the name haptophorous, the other possesses affinities only for the complement of the normal serum and which he has termed the toxophorous group. The alexin or complement of the blood having no affinities in common, can therefore only unite through the medium of the immune body or amboceptor.

Illustration.

It is a well-known fact that the haptophorus group of the amboceptor which attaches itself to the bacterial cell possesses a much stronger affinity for that cell than the toxophorous

group possesses for the alexin or complement except at a temperature corresponding to that of the animal body at which temperature it becomes more active. According to Ehrlich, then, the role of the amboceptor consists in tying the complements of the normal serum, which have no affinity for the bacteria, indirectly to those bacteria so that their solution and digestion may be affected by the complement. In other words, the amboceptor serves to concentrate on the bacterial elements to be dissolved all the widely distributed complement found in normal serum. The difference, then, between a specific bacterial serum and a normal one consists in the fact that the specific serum contains an amboceptor which is specific for a certain cellular element in the form of bacteria, and by means of which the complement present in all normal serum can be concentrated on this cellular element to cause its solution.

From the foregoing conclusion, it will be seen that by employing an immunizing agent in the form of a bacteriolytic serum a certain number of amboceptors may be given to overcome an infection due to a specific infecting organism. With the rapid strides now being made along these lines and with the ever increasing knowledge concerning the nature and application of immunization to our domestic animals, it is safe to assume that in a comparatively short time, the up-to-date veterinary practitioner will be able to measure the dosage of amboceptors in a relatively definite proportion to the infection with which he is dealing.

(To be Continued.)

"NOT SUPERSTITIOUS.—"Do you think a horse chestnut will cure rheumatism?" "I don't know, but I would rather chance a horse doctor."

KILLED BY A BLOW FROM COW'S TAIL.—*Binghamton, N. Y., Aug. 17.*—A blow from a cow's tail caused the death of William A. Wells, a prominent resident of Newark Valley. Mr. Wells was in good health and attending his farm chores when a cow he was milking switched her tail, striking him on the forehead with the fleshy part of the appendage. He went to the house, complaining of a pain in the head. It grew rapidly worse. A physician pronounced death due to a stroke of apoplexy superinduced by a blow from the cow's tail. Mr. Wells died last night.—(*N. Y. Press, Aug. 18, 1907.*)

REPORTS OF CASES.

SUDDEN DEATH OF A MARE FOLLOWING PARTURITION.*

By F. R. AHLERS, V. S., Iowa.

In order that we may arrive at a better understanding of the thought I bring to you to discuss, I will endeavor first to portray an example: Because of the rather unusual, and I may say, unlooked-for termination of what at first thought is apparently an ordinary, simple and easily-managed case, we have called to mind the fact that these apparently simple cases possess possibilities which we, being aware of them, must respect and guard against.

The case mentioned was a large draft mare, six years old, and in good condition. Though expected to foal, the owner did not have her under constant observation, so on arising one morning found labor begun and the head of the foetus protruding from the vulva. The general appearance of the mare, however, indicated that she had perhaps not been more than an hour arriving at this state of affairs. On arriving an hour later I found an anterior presentation with one foreleg retained. Attempts to repel the foetus were in a measure successful, but not sufficiently so as to allow the retained leg to be brought into position, the continued and violent labor pains preventing.

I put the mare sufficiently under the influence of chloroform to allow me to repel the body of the foetus, when by placing the sharp spur of the jointed repeller against the posterior face of the radius just above the knee I was able to flex all joints sufficiently to allow the foot to be brought over the brim of the pelvis. Delivery followed easily, the placenta following immediately. The mare seemed perfectly at ease, arose to her feet, and was soon removed to the stable, where she began to eat hay and was so an hour later when seen by the owner. In another hour she was dead.

I did not have an opportunity to hold a post-mortem, so will have to theorize: Post-partum hæmorrhage would cause a like result, though symptoms of weakness and distress would be observed at least an hour prior to death. Such hæmorrhage is not

*Presented to meeting of Iowa Veterinary Association, Jan. 28, 1907.

apt to occur when the foetal envelopes detach, as in the above case, at the time of delivery or before that event. A rupture of the uterus sufficiently large to allow such serious hæmorrhage would in all probability be accompanied by the prolapse of a bowel. Also some blood would be in evidence externally. Ruptures of the uterus of this extent are comparatively often seen, but the accompanying hæmorrhage is not a factor in the cause of death. In this connection, we might observe that the pressure of a gas-distended prolapsed bowel on the lacerated uterine edges would in a measure exert a hæmostatic influence.

A more plausible explanation of the case may be arrived at on considering the rôle that pulmonary emboli play in many cases of sudden death in the horse, and that we have conditions favorable to their production in a recently delivered mare. A recent thrombus may form as a consequence of the necessary, though not excessive manipulation of the uterus during labor. Or even the normal contraction of a gravid uterus when an obstacle to delivery exists may be the factor. Remembering that with a partial or complete separation of the placenta from the uterine walls prior to delivery, followed by the repulsion of the foetus from the vaginal passage into the uterus at a time when all parts are relaxed because of the anæsthetic administered, the introduction of a considerable volume of air is not unlikely to occur. The uterine veins, at this period veritable sinuses, have, in the subsequent contractions, this air forced into them. From the normal congestion present at this period it follows that a considerable volume of blood is brought into contact with this air. The natural sequence is a thrombus. That this may pass readily into the general circulation is apparent on remembering the absence of valves in the uterine veins.

We have doubtless seen many cases where manipulation and bruising of various parts of an animal's body, more excessive even than in this case, did not result in the production of a thrombus; also have injected air directly into veins during the process of intravenous injections without that result. The blood of all pregnant animals contains fibrinogen and paraglobulin in large quantities. These necessary elements to coagulation are found in the blood whether the animal is pregnant or not, but in the quantities that they occur in the pregnant we have offered the means of producing a thrombus should any of the other necessary adjuncts to coagulation be present.

It does not follow that this thrombus is set adrift immediately on forming, but when the congestion subsides the altered blood pressure makes the production of the bolus soon after delivery the more likely to occur at that time. Sudden movements or the force of a powerful contraction after delivery may send the thrombus into the blood current. That the embolus lodges in the pulmonary artery is merely the contingency seen in my case. That its final mooring may be in some other and less vital part is equally as likely. I have no statistics showing the relative frequency of the finding of emboli and thrombi in the mare and horse, but think here is certainly an explanation of the production of a percentage of them.

In the discussion which followed several members reported somewhat similar cases. Dr. S. Stewart suggested the possibility of death being caused by thrombus going to the brain and producing embolism of cranial vessels, or a toxine being formed. Dr. W. A. Stuhr suggested fibrin ferment formed in uterus and being carried to parts where circulation is sluggish, which is an ideal place for infarct.

RUPTURED UTERUS IN BITCHES.

By FRANCIS ABELE, JR., D. V. S., Quincy, Mass.

I find very little literature on rupture of the uterus in the bitch. Some good works make no mention of the same. A diagnosis is quite valuable, yet not so simple as one might expect.

Case I.—Boston terrier bitch, six or seven years old, heavy with pups, two days overdue, milk in udders, abdomen immense in size, no discharge from vagina and vulva not swollen, more quiet than usual, no labor. No pup in reach to finger.

Diagnosed rupture. Next day no change except less active. Third day had another veterinarian in consultation. She seemed quite weak; mouth clammy, extremities cold; decided to use forceps and reach for pups. First hold brought pup's head and thickness of uterus in same grip. Evidently forcep had found pup in the hernial opening. Bitch died, and on post-mortem a large old rent was found just about the bifurcation, while one other pup was completely free in the abdominal cavity.

Case II.—A fox-hound bitch, two days short of pupping, had had pains, now stood humped, abdomen tense, swollen, very sore to touch, mouth open, cold and clammy, ears and legs cold. With fingers caught hind legs of pup. Drew him out by towel

around his legs. With him came the uterus fundus and one long and short length of cornua. The long one, that which held this pup, had a gangrenous end. I destroyed bitch, and a post-mortem revealed mated ends of cornua. The one fresh, mating the healthy everted end; another gangrenous, mating the gangrenous everted end. Other pups were in the tips of the two cornua. There was peritonitis apparent in the abdominal cavity.

COMPLETE TORSION OF THE UTERUS IN A MARE.

By W. M. PRENDERGAST, D. V. M., Phoenix, N. Y.

On April 11th, I was called to see a brood-mare, 11 years old, which the owner said had been suffering attacks of colic for the past ten days.

History.—This mare had been kept in a box-stall. On the morning of April 1st the owner found her straining violently and in great pain. A non-graduate practitioner, who was called in, treated the mare for indigestion. These intermittent attacks of pain and straining continued up to April 11th, when I was called to see the mare.

Symptoms.—The mare did not seem to be in much pain, but was in a state of great depression. Pulse 70, very weak, temperature 104.5; examined per vagina. Anteriorly the vagina was constricted and drawn forward. The os uteri was almost obliterated, and no passage could be forced into the uterus. These attempts brought on violent straining. Examined per rectum, just anterior to cervix a hard knot-like structure was discovered.

Diagnosed torsion of the uterus. As the mare was in such a weak condition, no attempt was made to reduce the torsion. The mare died on the following day.

Post-mortem.—Great quantity of blood in abdominal cavity. The base of the uterus showed an extensive rupture, about 20 inches long, through which the dead foetus had escaped into the abdominal cavity. There was a complete torsion of the uterus, about six inches anterior to cervix. The torsion was from right to left. The walls of the uterus were gangrenous and adherent to the large colon.

CAT WITH TUBERCULOSIS.

By FRANCIS ABELE, JR., D. V. S., Quincy, Mass.

An Angora cat had difficult respiration of two days' duration; was gasping. The medical doctor had left strychnine pills for a member of family, about one-quarter of solution from one human tablet was given at intervals, to cat, with only temporary results. Two years previous this cat was born with assistance, mother and rest of litter died. When I castrated this cat, he was taken with syncope and I was informed that he had it often. Some time later enlarged parotid gland, not forming abscess, appeared. I told my suspicion of tuberculosis. Some time later was called to the two days' attack of difficult respiration. Recommended destruction of cat. Died on way home. Post-mortem showed miliary deposits on pleural surfaces in great numbers. One lobe of lung yellow and solid. Showed it to medical doctor for that family, and we agreed that the cat probably got the disease from one of the members of the family, who appears affected, though this is not positively known.

SEPTIC MILK INFECTS BABY.

By FRANCIS ABELE, JR., D. V. S., Quincy, Mass.

Was asked advice as to new milkman to supply baby. The child had had serious sore throat which medical doctor attributed to milk supply. It turned out that they had been getting milk from a milkman who had just lost a cow (to my own knowledge) from septic metritis due to retained placenta and who had another cow decubitus from the same trouble. It appears to me that the medical doctor was correct. He does not know now these facts. I wonder if these conditions of septic infection are not really frequent but unsuspected.

GALLOGEN IN THE TREATMENT OF SCOURING HORSES.

By G. A. KNAPP, V. S., Millbrook, N. Y.

A driving horse in an emaciated condition, suffering from chronic diarrhoea, came into my possession about four months ago, and I at once started treating him with the mixtures usually used in such cases. An improvement was at first noted, but

in a few days the horse was as bad as ever. About that time the intestinal astringent sold by C. Bischoff & Co., of New York, was brought to my attention. After using it for three days a marked improvement was noted; its continual use for three weeks has completely cured the animal, which was before practically worthless. I have since used the drug in similar cases with astonishing results.

Having obtained such beneficial results with Gallogen, I consider it to be the greatest drug of its kind on the market.

RUPTURED UTERUS IN COW.

By FRANCIS ABELE, JR., D. V. S., Quincy, Mass.

Cow was overdue; did not strain; had ceased eating. Keeper thought she had dead calf. Much œdema about and in front of udder. Removed calf with almost no trouble and no labor pain. Hæmorrhage in womb led me to examine uterus, where was found large rent on inferior surface. She died.

OLD LADY TO DRUGGIST: "I want a box of canine pills?" Druggist: "What's the matter with the dog?" Old Lady (indignantly): "I want you to know, sir, that my husband is a gentleman!" Druggist puts up some quinine pills in profound silence.

PROSECUTION OF ILLEGAL PRACTITIONERS IN NEW JERSEY.—Dr. George Locke, of Flemington, N. J., indicted for practicing veterinary medicine without a license from the State Board of Veterinary Medical Examiners of New Jersey, has been convicted and sentenced to imprisonment in the Hunterdon County (New Jersey) jail for sixty days. Dr. Asa Thomas, graduate of a correspondence school at London, Ontario, commenced practice at South Amboy, N. J., without complying with the laws of New Jersey. Thomas has been arrested and put under \$300 bail awaiting the action of the Grand Jury. Dr. Fred. Eason, of Englewood, N. J., who claimed to be a graduate of the Royal College of Veterinary Surgeons, London, England, not long since was arrested and fined \$100 for attempting to practice in New Jersey without a license from the State Board of Veterinary Medical Examiners.

ABSTRACTS FROM EXCHANGES.

ENGLISH REVIEW.

By PROF. A. LIAUTARD, M. D., V. M.

RUPTURE OF CHORDÆ TENDINÆ IN THE HORSE [*John Campbell, M.R.C.V.S.*].—This five-year-old mare some fourteen days previously had collided with a cart, and after the collision, when ascending a hill, she stopped and refused to go, apparently turning breathless, but after resting for a minute or so she proceeded all right and worked without giving any further trouble until the time of this record. And yet her general appearance gave little assistance to a correct diagnosis. If allowed to stand quietly, she showed no signs of suffering, but moved out of her stall with difficulty. Her breathing was normal, pulse frequent and irregular, temperature 106° F. The case was diagnosed as pericarditis. Stimulants and febrifuges with counter-irritation to the chest were prescribed. After four days the mare died. Post-mortem: Large quantity of fluid in the peritoneal cavity, posterior vena cava and abdominal veins as well as the liver and spleen were gorged with blood. Lungs pale and anæmic, pericardium thick and congested, and on the right side of the heart about three-fourths of the chordæ tendinæ were ruptured.—(*Veterinary Record.*)

PUNCTURE OF THE DIAPHRAGM AND STOMACH—SURVIVAL FOR NINE DAYS [*H. G. Allen, A.V.C.*].—It is the concise record of a mare which staked herself when going over a jump. She inflicted upon herself a wound on the off-side of the thorax at the lower third of the intercostal space between the seventh and eighth ribs. There was a large oedematous swelling which was treated antiseptically. The animal progressed well for the first eight days, showing only some slight abdominal pains. On the eighth day following the accident there were marked evidences of peritonitis, which carried her away on the ninth in the afternoon. At the post-mortem were found localized patch of pleurisy, puncture of the diaphragm, puncture of the stomach and extensive lesions of peritonitis, with food in the abdominal cavity and the omentum.—(*Veterinary Record.*)

TORSION OF THE UTERUS IN A CAT. [*G. H. Williams, F.R.*

C.V.S.].—A four-year-old cat had a last lot of kittens at Easter. Lately she is in pain, looses flesh and refuses food. The anterior portion of the abdomen is bulging, the flanks and the posterior part of the abdomen are hollow. Enlarged liver is suspected. To avoid more suffering the cat is destroyed. The uterus is gravid and twisted on itself anterior to the os. The twist forms a cord of four folds along the floor of the abdomen, the major part being spread out into two parts extending to the diaphragm, liver and stomach. The left horn contained two foetuses, the right, one. The uterine wall was nearly an inch in thickness and very congested. There was about one pint of hæmorrhagic fluid in the uterus.—(*Veterinary Record*.)

PARTURIENT LAMINITIS IN A COW [*Henry B. Eve, M.R.C.V.S.*].—In plethoric condition a three-year-old cow had been delivered of a dead calf, but she had not cleaned properly. Two days later she was standing with symptoms similar to those noted in horses suffering with laminitis. She appeared unable to move and when made to do it, it was evident that the weight of the body was thrown on the heels, the former being as it were swung from side to side as the limbs were advanced. The animal had an anxious face and was in pain. The hoofs were hot, sensitive to the touch, and painful on percussion. Loss of appetite, dry muzzle, high temperature of 106° F., hurried respiration, quick pulse, great thirst. Parturient laminitis was diagnosed and guarded prognosis given, as septic pneumonia was feared. Treatment: Removal of contents of the uterus, disinfection with chin-sol and injections of glycerine and extract of belladonna. Internally, saline aperient and febrifuge draught. Local treatment of poultices to the feet and mustard on the chest. Finally stimulating liniment on the coronets, standing on sawdust, good nourishment and stimulants with tonics. Complete recovery eventually took place.—(*Journal of Compar. Path. and Ther.*)

STRYCHNINE POISONING IN A DOG [*T. Hodgins, M.R.C.V.S.*].—Interesting case by the fact of the length of time before the appearance of the symptoms. A drawer containing tablets of strychnine was upset and a toy ruby King Charles spaniel, of nine months, was observed chewing something in the place where the drawer had fallen. Two hours after, he manifested symptoms which left no doubts as to the nature of his troubles. Convulsions, opisthotonos, impeded respiration, anxious expression of countenance, eyeballs staring, pupils dilated. Notwithstanding bromide of strontium, injections of sulphate of morphine, death

took place from asphyxia during a paroxysm. The dose of poison must have been very small, and the fact that the dog had just eaten its meal may account for the length of time, two hours, before the poison manifested its effects.—(*Veterinary Journal*.)

INTERESTING TWIST OF THE BOWELS [*Guy Sutton, M.R.C.V.S.*].—Hackney gelding, aged 28, manifests sub-acute abdominal pains. His appearance is not very distressful, pulse rather weak, temperature 101° F.; rectal examination is negative. He receives for treatment sedatives, antizymotics, intestinal stimulants, glycerine enemata and local applications to the abdomen. Chloral was given during the middle of the night and the horse dies twenty hours from the time when first noticed in pain. Post-mortem: Ruptured stomach, which probably occurred at the point of death, and a twist of the intestine around the peduncle of a lipoma on the mesentery.—(*Veterinary Journal*.)

INVAGINATION OF THE CÆCUM EXISTING FOR THIRTY DAYS IN A PONY [*Guy Sutton, M.R.C.V.S.*].—Polo pony has violent colic, which is subdued with morphine, enough to allow an examination, which is rather negative. Animal is in great pain for twenty-four hours. Towards the end of the second day these pains seem to abate and comparative ease is manifested. Temperature is 104° F., pulse 65, irregularly intermittent. No faecal passages have occurred since four days. Strychnine, carbonate of ammonia, belladonna are prescribed. On the seventh day bowels moved. Temperature is a little lower. After a while improvement seems to manifest itself, but after a few days all the bad symptoms return and death takes place a full calendar month from the onset of the symptoms. When the abdomen was opened the cæcum was found missing and the colon enormously distended. Cutting through the walls of this organ, the cæcum was found completely invaginated in it. It was not green in color and not putrid. The cæcal walls were œdematous and thickened.—(*Veterinary Journal*.)

PIN IN THE RECTUM OF A DOG [*G. H. Livesey, M.C.R.V.S.*].—The record of a case occurring in a black toy Pomeranian puppy, four months old, which had swallowed the pin and presented the usual symptoms of diarrhoea, vomiting, convulsions, excessive sensibility, etc. The anus was tightly closed, and it was with difficulty that rectal examination could be made. About one and a half inches from the anus a foreign body was felt transversely across the rectum. It was eventually secured by one end

and extracted. It was a common pin. It was said that this was the second time this thing had taken place with the dog, but in the first instance the pin passed without trouble.—(*Veterinary Journal*.)

TWO CASES OF SCROTAL HERNIA IN CALVES [*H. E. T. Mason, M.R.C.V.S.*].—These two animals had been previously castrated, but both when seen by the author had swelling of the scrotum due evidently to scrotal hernia. In the first case it was reducible. As no clams to fit the case could be found, on account of its size, useless attempts were made to treat it with suspensory bandages. The treatment proved unsatisfactory and the animal was slaughtered. In the second, the enlargement was bigger, very hard and irreducible. Clams were out of the question. Massage was resorted to, and, although it seemed to do good, it took six weeks before the animal could be discharged with a scrotum very little larger than normal. With daily gentle massage it had come quite right.—(*Veterinary Journal*.)

INTERESTING CASE OF A NEEDLE IN THE ŒSOPHAGUS OF A KITTEN [*Prof. G. T. Dunne, M.R.C.V.S.*].—A seven-months-old kitten was suspected of having swallowed a needle with thread. On account of her struggles, it was necessary to chloroform her, so as to make minute examination of the mouth. This was negative. The neck, trachea, œsophagus were carefully explored, but nothing was found. The case was almost laid down as one of laryngitis, when the animal suddenly sneezed and simultaneously a hard, fine point was felt beneath the skin, close to the entrance of the chest. An incision made down on the part brought to light the needle and thread, *eye first*, protruding through the œsophagus. They were removed, and after two days of milk diet the kitten was all well.—(*Veterinary Journal*.)

GERMAN REVIEW.

By J. P. O'LEARY, V.M.D., Bureau of Animal Industry, Buffalo, N. Y.

REPORTS CONCERNING THE USE OF HYDROGEN-PEROXIDE (PERHYDROL-MERCK [*Dr. Aug. Zimmermann*]).—In the ambulatorium of the Imperial Veterinary High School, Hungary, hydrogen-peroxide has been used extensively for the last five years in the treatment of various wounds, fistulæ, in otitis, eczema, stomatitis, as a mouth wash, and finally as a collyrium. This

preparation seems to be especially suitable for loosening bandages which have become firmly adhered to wound surfaces. Its effervescent action producing foam when in contact with wound secretions, renders easy the removal of bandages from raw surfaces without causing pain or bleeding. In dogs which are subject to otitis externa, H_2O_2 , 10%, may be used in the beginning; later a 30% concentrated solution may be applied with good effect. In extensive ulcerations this remedy causes an intense itching sensation when first applied, but after swabbing out the parts thoroughly three or four times the wound becomes covered with epithelium and the irritation entirely disappears. When the preparation is poured on the surface of wounds, especially wounds or ulcers in the hidden parts of the ear, we can hear an effervescent sound as the peroxide acts upon the pus and blood-clots. The secretions and disagreeable odors emanating from within the ear are diminished and removed. After the H_2O_2 acts on the ear for several minutes the internal surface is to be swabbed out and thoroughly cleansed; then in 24 and 48 hour intervals this treatment is to be repeated until in the course of a week or eleven days complete recovery will follow. A 30% solution is very useful in the treatment of moist eczema; in the most stubborn cases the moisture disappears after a few days and the humid surface will dry by the action H_2O_2 tampons. The inflammation and irritation soon disappear. H_2O_2 can also be used mixed with glycerine, equal parts, or 1—3, also mixed with lanolin. (1 to 1.5 H_2O_2 as a salve.) It can also be used with advantage undiluted and without a mixture, as 30% hydrogen-peroxide. In stomatitis it can be prescribed for horses and dogs. It is particularly recommended in stomatitis ulcerosa of dogs, when in a few days after its application the disagreeable odor completely disappears. The ulcers are changed into fresh appearing, nice, granulating, clean wound surfaces with no tendency to bleed. As a result of its hæmostatic action it can be used as a tampon in the extraction of teeth. On account of its antiseptic action and as it does not possess any irritating or other disagreeable properties it can be used in the various wounds of the mucous membranes as gingivitis and wounds of the tongue, which are of frequent occurrence in horses. As a collyrium it is recommended in weak solution (0.5—1%), particularly in traumatic ulcers of the cornea. Further, it exercises a favorable effect in conjunctivitis with profuse secretion.—(*Zeitschrift für Tiermedizin*, 1906, Heft 1. 2.)

CONTAGIOUS OPHTHALMIA IN CATTLE [*Jermolajew*].—The disease was brought into the Semenows district in the fall of 1901 by a cow affected with the malady. The animal, having been purchased in the Makarjew district, was allowed to mingle with the herd and infected one animal after another, so that at the date of inspection 30 diseased animals were discovered. Notwithstanding isolation, the healthy cows contracted the disease. On account of the intense frost in the year 1901, the infection was confined to three villages. During the warm summer in the year 1902 the malady set in again with renewed vigor and spread in spite of all precautions over other districts so that in the year 1903 all the cattle in some villages had been infected. The period of incubation was very short, as cattle suffering from a slight degree of lachrymation and which had been isolated, conjunctivitis set in the following day. It was interesting to note that the larger per cent. of animals were affected in one eye and that the infection spread very rapidly. The author assumed, from the following facts, that the infecting agent might be found in the abundant secretion of tears. Flies are the distributors of the contagion. They swarm in large numbers about the eyes and which follow the direction of the secreted matter which follow the direction of the secreted matter which flows from the eye. The manner in which an eye becomes affected depends upon the direction of the wind, as the flies do not alight on the side from which the wind blows, but rather on the opposite side. A hot, dry summer and dust are particularly favorable to the propagation of the disease. The first symptoms are those of an intense lachrymation, swelling of the eyelids, injected conjunctiva, the animal droops its head, the cornea assumes a milk-white color, with intensely injected blood vessels, and photophobia; the eyeball is elastic. After the lapse of a few days an elevation about the size of a hempseed appears on the surface of the cornea, almost in the center. This ruptures and discharges its contents, leaving behind a circular ulcer. The course of the disease is usually favorable. In a few cases spots and cicatrices remain upon the cornea. Recovery takes place in from two to four weeks. Treatment: Dark, cool stable, cold applications, a collyrium of $\frac{1}{2}$ to 1% solution of creolin, a 3 to 4% solution of boracic acid, also dusting with calomel and sugar equal parts.—(*Veterin. Feld. Wcstnik*, 1904, 18.)

THE SIGNIFICANCE OF THE NEGRI BODIES IN THE DIAGNOSIS OF RABIES [*Dr. Ernest München*].—Since Negri published his

studies on the etiology of rabies, a number of control experiments have appeared, and at present there is scarcely a doubt arising that the Negri bodies are the only specific microscopical criterion of rabies. The author refers in his report to the technique of the examination, the size and shape, the location and the importance of the Negri bodies. The fresh examination can easily lead to confusion of the cell nucleus or myaline globules with the Negri bodies. Therefore, the rapid imbedding process recommended by Bohne, by means of acetone-paraffin in combination with Mann's customary staining method is much more recommendable, because with this the bodies can be demonstrated with remarkable certainty and rapidity. As the bodies hitherto were found only in the central nervous system and there again in the first instance in the cornu ammonis and afterwards in the cerebellum, sections are to be made $\frac{1}{2}$ to $\frac{3}{4}$ m.m. thick of the cornu ammonis and then immersed in 15 c.cm. of pure acetone and allowed to remain there for 35 to 40 minutes at 37° C. until they assume the firmness of alcohol hardening. When the brain substance has undergone putrefaction this procedure must be prolonged, then the sections must be placed for 60 to 70 minutes in paraffin at 60° C., which has a melting point about 55° C. After solidifying, the paraffin block can be cut with any microtome. The whole process occupies about two and a half hours. For staining, Mann's eosin methylene blue mixture is used, as the bodies can be plainly discerned in from $\frac{1}{2}$ to 4 minutes after. Nevertheless, the author obtained his best preparations when the sections were treated for a short time with a diluted alcoholic picric acid solution, after being previously stained according to Giemsa (new modification). The ground substance of the Negri bodies is then brown violet, basophile parts black. The other staining methods need not be mentioned here. The size and shape of the negri bodies vary extremely, from the very minute 1—1.5 microns in diameter they go through a series of growths, accretionative in form, until they attain the diameter of 10-15 microns and not rarely we see forms whose dimensions in comparison to the original are in truth enormous. The smaller are mostly spheroidal, the medium round or oval, and the large oval, elliptical or pear-shaped. As the bodies lay mostly intracellular in the ganglion cells, their shape is somewhat dependent upon the form of the cell. The bodies consist of a hyaline membrane and a basement substance. Within these latter lay one to three spherical opaque

formations, so-called large inner formations. Around these, distributed with more or less regularity in the ground substance or in the periphery, lay smaller, glistening, so-called small inner formations. Both contain punctiform, ring, rod, or dumb-bell-shaped indentations and vacuoles. The bodies appear first toward the end of the incubation period in the region of the nerves. In the incipient stage of the clinical symptoms, the bodies are very minute or perhaps cannot be identified. The shorter the duration of the disease, the fewer and smaller the bodies appear. The largest forms were hitherto found in dogs and cattle. Until now, the Negri bodies have been found only in rabid patients or animals dead of the disease. In all kinds of nervous diseases and in healthy dogs we seek in vain for these bodies. If we inoculate animals with brain substance, which contains the Negri bodies, the animal sickens with the disease. Negri considers that the bodies are parasites, perhaps sporozoa. Still at present it is a disputed question whether the bodies are a developing stage of the parasites of rabies or a product of it. Concluding, Ernest presents the following chief points:—(1) In 96-99% of rabid cases we always find, when the clinical symptoms have already appeared, intracellular bodies (Negri bodies) in the central nervous system, which are not seen in any other disease or in health. (2) The microscopical diagnosis of rabies is still possible, where inoculations, on account of the putrefactive condition of the materials used, or from any other cause, would give a negative result. (3) When the Negri bodies are positively discerned the inoculation test can be dispensed with. When the histological test proves negative, the inoculation test is imperative. (4) The diagnosis of rabies through the Negri bodies is always possible in 96-98% of cases in from three to four hours by means of the acetone-paraffin method. (5) Whether we have before us in the Negri bodies a developing stage of the parasite of rabies or a product of the parasite and of cell reaction, is at present a disputed question.—(*Berliner Tier Wochensch.*, No. 24.)

FRENCH REVIEW.

By PROF. A. LIAUTARD, M. D., V. M.

LIPOMAS OF THE OMENTUM IN A HORSE [*Mr. Hurpez*].—The subject is a horse, aged, which has always had difficult diges-

tion, accompanied with colics. These little by little became more frequent and more severe until finally he died with one. The post-mortem revealed a well-marked and extensive congestion of the small intestine with some adhesions with the cæcum and with the large colon. Numerous tumors, dark red, looking like chicken combs stuck together and very large, cover the entire surface of the large colon, cæcum and small intestine. On the folded colon they press upon the organ and squeeze it, so as to give rise to the formation of two dilatations, where the fecal substances circulate with difficulty. These tumors are lipomas and evidently were the cause of all the trouble and of the death of the animal.—(*Recueil de l'Hygie. et Médec. Vétér. Milit.*)

LYMPHO-SARCOMA IN THE DOG [*Mr. A. Borrel*].—A tumor spontaneously inoculable by coit is frequently found on the penis or in the vagina of male or female dogs. The author has had the opportunity to study one of these in its developing stage, after removal from the vulva of a slut. In the tissues surrounding the neoplasm, in the subcutaneous glands and in the deep epithelial ramifications, starting from the cutaneous surface, were a great number of parasites, probably larvæ of acari. The larvæ may pass into the subepithelial tissues and promote phagocytal reactions, forming nodules which by degrees take the typical aspect of the nodules of the tumor. The action of these larvæ as agents of inoculation would explain very well the contagion of the neoplasms by the natural channels, especially in coitus and also their presence in the vagina and on the penis. Further observations will confirm or upset this theory.—(*Recueil de Méd. Vét.*)

A NEEDLE IS EXTRACTED FROM AN ABSCESS IN THE STERNO-ABDOMINAL REGION OF A COW [*Mr. Benjamin*].—A boy took a piece of one rib of a parasol, 12 centimeters long, sharpened it on one end, made a hook at the other and attached a piece of cord to it. He intended to hook on this apparatus the fishes that he hoped to catch at a fishing excursion. He had good luck and returned home with a mess of fish, which he was to fry and enjoy. Unfortunately, he laid the string on the ground and while he prepared his cooking apparatus a cat passed by, took hold of the fish and string and ran away to a hayloft, where it had a fine treat. Some time after, one of the cows of the farm seemed to walk with difficulty, groaned when she was about to lay down; a swelling made its appearance under the sternum. This got very large. Poultices were applied and after

a few days fluctuation was present. A large abscess was opened and in its center the exploring hand felt a sharp-pointed structure. As it was impossible to extract it, the cow was cast, the incision of the abscess enlarged and finally the piece of rib of the parasol was extracted. Recovery followed.—(*Bullet. de la Soc. Cent. de Méde. Vétér.*)

TEARING OF THE POSTERIOR VENA CAVA IN A HORSE [*M. M. Brocheriou and Foucault*].—An English thoroughbred, ten years old, while exercised to jump, misses his effort, makes a somersault and falls. He gets up, shows great lameness in one hind leg, walks a few steps and drops dead, the cause being a supposed fracture of the vertebral column. Post-mortem: The abdominal cavity contained about fifteen litres of dark blood. The intestines, liver and spleen and kidneys were normal but bloodless. In the sublumbar region, on its inferior border, the vena cava had a linear tear. *ante-mortem*, which measured 15 centimeters in length. There were no vermiform aneurisms, but the lymphatic mesenteric glands seemed hypertrophied. In the thoracic cavity there was nothing abnormal. In the pericardium there was a little reddish liquid. The cardiac muscle was hypertrophied and weighed 4 kilog. 730 grammes. The hypertrophy was more marked on the left ventricle. There were very interesting lesions on the right auricle. Its walls were the seat of nuclei of bony infiltration, six or seven in number, of various sizes, the largest as big as a hazelnut. The coronary blood vessels were normal.—(*Bullet. de la Soc. Cent. de Méde. Vétér.*)

SPONTANEOUS RECOVERY OF A VENTRAL HERNIA IN A PIG BY MORTIFICATION AND ESCAPE OF THE CONTENTS OF THE HERNIAL SAC [*Mr. C. Dubois*].—A six-months-old pig has a bad fall and as a consequence a tumor develops on the left flank. In a few days this takes enormous dimensions. It is a regularly rounded swelling, as big as a child's head, and situated on the lower part of the left abdominal wall. It has an elastic consistency, is a little painful and reducible. Vermicular motions and glouglou sound are detected in it. Although the hernial ring is not detected, there is no doubt that the case is one of ventral hernia. An operation is advised and the consent of the owner waited for before interfering. While this is not sent, a new condition is observed. The appetite diminishes and soon stops. The pig is dull, lays concealed in its straw, the abdomen becomes painful, the hernia is twice as large, the skin is showing marks of sloughing here and there and soon fistulae exist in

several places, from which escape dark fluid with very offensive odor and mixed with solid matters. A free incision is made. A large hernial sac is opened, it contains a magma of fæces and necrotic tissues having a very offensive odor and some having yet the characteristic form of a piece of intestine. After this is all removed and disinfected a small opening is detected at the bottom of the sac; it is the hernial ring, which opens into the intestine and forms an artificial anus, from which fæcal matters come out. After that operation the pig begins to improve. After a week the artificial anus is reduced and finally closes entirely, and in two weeks the animal is defecating naturally and puts on fat very rapidly.—(*Revue Vétérinaire*.)

ACUTE SARCOMATOUS INFECTION IN A DOG [*Prof. Cadéac*].—A slut, aged eighteen months, has first under the throat an adenitis, characterized by a round swelling, movable, painful and rapidly enlarging. In less than fifteen days, this first neoplastic center forms a double chain extending on each side of the neck, shoulders, thorax and abdomen. It occupies all the lymphatic network, it spreads everywhere, in all directions. The nodular development is so great that it resembles an eruptive disease; the subcutaneous, perimascular, intermuscular tissues and the thickness of the skin are infiltrated with miliary granulations, pimples and small tumors. The whole skin from the tip of the nose to the extremities of the paws is literally raised by these growths. Cancerous cachexia progresses with the neoplastic infiltration. Circulation and respiration remain normal. The animal died one month after the first appearance of the disease. Post-mortem reveals growths developed in the skin, subcutaneous tissue, all the muscles and in all regions of the body. They had gathered together and formed masses around the tendons, the extremities and specially around the hocks. They varied in size and all were whitish or rosy on their surface and milky white on section. They all had a lardaceous consistency without softening in the center. The internal organs were also affected. The liver, kidneys, spleen and peritoneum were equally full of them. The lungs were about free. All the lymphatic glands are more or less affected. Their nature was embryonary *lympho-sarcomatous*, a form of tumor which becomes generalized most easily and frequently in dogs.—(*Journ. de Zootechn.*)

URINARY LITHIASIS IN A SHEEP—ISCHIAL URETHROTOMY [*Mr. Freger*].—A ram stops eating and has colic. He is uneasy and shows he is in great pain. Rumination is stopped and all

food is refused. He lies on the belly, suddenly rises and makes vain efforts to micturate. On a level with the ischial curvature of the penis there is a painful spot. To ascertain if the ram micturates or not, a cloth is secured under his abdomen. This remains dry. Evidently the ram does not pass any water. As on account of the disposition of the urethra, catheterism is not possible, ischial urethrotomy is performed. The urethra is exposed and opened, but when a catheter is to be introduced the valve that exists in the canal prevents it. As there is much hæmorrhage which demands plugging, the animal is left alone. He does well, passes water through the ischial fistula and soon puts on flesh. But the peculiar escape of the urine gives rise to excoriations on the skin. Finally, the operation having given temporary relief, the fistula remained running, and the animal lost his condition. To the economical point of view, the operation is of no interest in sheep.—(*Journ. de Zoötechn.*)

OF INTEREST TO OPHTHALMOLOGISTS.—*Paris, July 31.*—Dr. Fortin has reported to the Academy of Science a new contrivance which he believes is to be of great service in eye diagnosis. The physicians found that the light from a mercury vapor lamp, passing through two sheets of blue glass and reflected into the eye by a large lens, reveals the internal condition infinitely better than the ordinary white light. By placing a screen with a pinhole between the light and the eye a magnified image of the vessels at the back of the retina, which have hitherto been almost invisible, has been obtained.

HORSE ELECTROCUTED THROUGH MOUTHING AN ELECTRIC BULB.—The following item from the *Denver Republican* of Aug. 21, has been investigated by Dr. Mark White, of that city, and verified: Reaching up and grasping the setting for an incandescent bulb in his mouth yesterday, one of the handsome dapple-gray transfer horses belonging to the Harrington Plumber Mercantile Company was electrocuted. Death resulted only a few minutes after the accident occurred. S. G. McHenry, who had charge of the team, endeavored to remove the electric fixture from the animal's mouth and himself received a shock that knocked him violently against the side of the stall. The wire from which the shock was received had not been used for some time. On investigation after the accident it was found that nearly 200 volts of electricity passed through the horse's body. The animal was valued at \$300.

ARMY VETERINARY DEPARTMENT.

CONFERENCE OF ARMY VETERINARIANS AT KANSAS CITY.

FORT RILEY, KANSAS, July 22, 1907.

Editors American Veterinary Review:

DEAR SIRs:—I wish to appeal to the many Army Veterinarians who are within easy distance of Kansas City as to the necessity of their attending the American Veterinary Medical Association meeting that we may consult together and with the legislative body of the above-named organization. We have got to start anew and endeavor to get a new bill before Congress at the next session.

Judging from the very interesting letter printed in the July REVIEW, we have a staunch supporter of our cause in Chairman Hull, of the House Committee, and we are sure of the same support from Senator Warren, of the Senate Committee. With such men back of us, it seems possible for us to obtain favorable legislation.

The Association will be well represented by the veterinarians from Riley, there being at present four at this station, and I am sure that those from Leavenworth will be in attendance; and there is no reason why there should not be more Army Veterinarians in attendance than ever before.

At the last session of Congress the appropriation bill was changed so that it seemed that veterinarians would receive the 10% foreign service pay, but it now appears that the Paymaster-General is to disallow it on the technicality of the wording of the new measure. The words "commissioned officers" were stricken out, but the bill contained the clause, "as provided by act approved June 30, 1902," and in that act foreign service pay is limited to commissioned officers.

The only way out of all these irregularities is that the veterinarian be a commissioned officer, and until such be the case we will be subjected to various injustices which have from time to time been mentioned in the "Army Veterinary Department" of the REVIEW.

Let all who possibly can be present at the meeting in Kansas City, and see if we cannot get the ball started rolling with increased vigor.

CHAS. H. JEWELL, *Vet. A. C.*

THE ADOPTION OF THE "MALLEIN TREATMENT" BY THE ARMY.

The veterinary profession at large may look upon the Army Veterinarians as being a number of years behind the profession since the Army has taken up the "mallein treatment" for glanders, and for this reason I wish to state for the benefit of the Army Veterinarians as a whole that this was not done through their action, but it came about through an order issued from the War Department, and was most likely the result of the letter transmitted to the Chief of Staff by Dr. Richard B. Corcoran. This letter was published in the REVIEW, and no doubt was widely read and commented on, yet no comments were recorded in the REVIEW. Horses may cease to react to mallein, but that is no proof that they are cured of glanders. I think the report by Dr. Gage is very good evidence that such animals are a constant source of danger. The question of the disposal of reacting animals which are to all appearances sound is one of the most perplexing problems which we have to deal with. The only method would be to exterminate the disease by a crusade against it throughout the United States similar to the one against contagious pleuro-pneumonia of cattle.

CHAS. H. JEWELL.

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ARMY PERSONALS.

THE QUARTERMASTER-GENERAL has allowed an appropriation of \$3,000 to build a veterinary bacteriological laboratory in connection with the training school at Fort Riley.

DR. ALEXANDER PLUMMER, 4th Cavalry, who has been on a two months' leave, returned to Fort Riley for duty on Aug. 3d. He spent his vacation in the mountains of California and Colorado.

DR. GEORGE HANVEY, 6th Field Artillery, was by his own request transferred to the 6th Cavalry and joined his regiment at Fort Meade, S.D. The 6th Cavalry will leave for the Philippines in September.

DR. EUGENE V. DOWD, instructor in horse-shoeing at the training school at Fort Riley, has resigned, and the place is temporarily filled by Mr. Frank Churchill, pending an appointment by the Civil Service Commission. An examination was held July 10th throughout the United States for applicants wishing the position.

CORRESPONDENCE.

MINNESOTA GOES SOME, TOO.

ST. ANTHONY PARK, MINN., Aug. 16, 1907.

Editors American Veterinary Review:

DEAR SIRs:—In the July REVIEW the editor paid a high compliment and a well-deserved one to Pennsylvania veterinarians for their splendid success with their last Legislature. Pennsylvania has done great things and our Minnesota hats are off to Pennsylvania's splendid organization, and the good men who make up that organization.

Minnesota has no veterinary college. Her veterinarians believe in fewer colleges and better ones, so we can not make any comparison on that score.

We, too, are proud of our financial showing. Minnesota can duplicate Pennsylvania's \$135,000 for live stock sanitary work, our last Legislature having appropriated a total of \$95,000 for work with glanders and tuberculosis. Our sanitary board has another \$38,000 appropriation for control work, and the Legislature gave also a special \$2,000 for work with swamp fever, making a total \$135,000.

Our veterinarians and stock men have secured from each of the last two congresses \$5,000 as a special item for investigation work with swamp fever.

The veterinary division of the experiment station has available, for 1907-8, an appropriation of \$9,750 which will surely be increased somewhat for the fiscal year of 1908-9, not counting the increase, however, and multiplying that available this year by 2, this gives \$19,500.

Our last Legislature also passed a strong stallion registration bill which provides for veterinary examination and licensing of all stallions doing public service. This brings an annual fund of approximately \$5,000 or for the biennial period the neat sum of \$10,000, making a total of \$174,500 for veterinary, sanitary, control, and investigational work.

We believe that Minnesota has a larger pay-roll for sanitary board work, and does more direct field work than any other State in the Union. Our board employs one secretary and executive officer (veterinarian), four field veterinarians, and a veter-

inary bacteriologist, all on full time, and an assistant secretary. The total pay-roll for these being \$11,520, not counting the rise of local veterinarians.

Minnesota claims to be using more tuberculin and more mallein by a very wide margin than any other State, and we would be very glad to compare our police control work with tuberculosis, glanders, and hog cholera with any other State board's work.

The last Government report, B. A. I. 1905, shows that Minnesota is by a comfortable margin the largest user of Bureau tuberculin. Only two other States, Massachusetts and Vermont, approach the Minnesota figure, Minnesota having received, approximately, $\frac{1}{4}$ of the total output of Bureau tuberculin in a list of 33 States. The same report shows for mallein, that we are using over $\frac{1}{3}$ of the total output and four times as much as any other State in a list of 20 States, barring the District of Columbia; and we have no more glanders than our neighbors, but rather less. Pennsylvania does not appear in either list and the reasonable inference is that the live stock sanitary board of that State is using tuberculin and mallein made at home. As figures for the amount of these agents used in that State during the year quoted are not at hand, I may be treading on uncertain ground so far as Pennsylvania is concerned when boasting that Minnesota uses more mallein and tuberculin than any other State, but there can be no doubt of this in regard to mallein and we shall claim it for tuberculin until the statement is disproven.

We secured from the last Legislature just what we asked for in the way of a revised Practice Act, and at this writing do not know where we would change a single phrase if we could. In other words, we think that our Minnesota Practice Act is just about ideal.

The Minnesota State Medical Association, meeting this month, will consider a recommendation by its President for the establishment of a section on Veterinary Medicine. So far as the writer knows, this is the first State medical association in America to give our profession such recognition.

Minnesota veterinarians expect to have representatives seated this winter in the voting membership of the State Agricultural Society, and thus have a voice in actual management of the largest State or provincial fair in America. If there is a reader of the REVIEW who doubts this statement let him come to St. Paul during the first week in September. The total gate re-

ceipts last year were twice as large as those for any other state fair, and during the one week of its continuance it slightly exceeded the total gate receipts of the famous Toronto Provincial Fair for two weeks. Our hats are off to Pennsylvania, but unless the Pennsylvania boys will be content with second place in the future they had better plan to "go some," and keep everlastingly at it.

M. H. REYNOLDS.

PROF. W. OWEN WILLIAMS AND SURRA.

BATON ROUGE, LA., Aug. 20, 1907.

Editors American Veterinary Review:

DEAR SIRs:—In reading over Dr. C. Nockolds' interesting and instructive "Some Notes on the 'Tryps'," I was rather surprised to see the statement attributed to Prof. W. Owen Williams, viz., that he (Prof. Williams) had, while employed as chief inspecting veterinary officer at the British remount depot near New Orleans, Louisiana, during the Boer war, seen lots of surra animals. Surely Professor Williams must have been trying to perpetrate a joke on us on this side of "the pond" when he made such a statement as that, as he must, after a sojourn of some six months in Louisiana at the time referred to, have known that such was not the case. Your correspondent has been connected with the veterinary division of the Louisiana State University and Experiment Stations for the past eighteen years, and has never seen, heard of, nor had it even suggested, a case of surra in the State of Louisiana; and we believe, that, had a case ever occurred in this section, it is more than probable it would have been brought to our notice. Besides, during Professor Williams' stay in New Orleans, we had the pleasure of calling upon him at headquarters on one or more occasions, and not only so, but traveled with him, by sea, from New Orleans to Liverpool, in 1900, and was his close companion, as he was confined to his stateroom, almost the entire voyage, with an acute attack of rheumatic fever, but, although we discussed various topics, interesting to both of us from a professional standpoint, he never once hinted at having seen any "surra animals." All this leads us to think that Williams must have been trying to "scare" us a bit, without ever expecting that his statement would be reproduced in "cold type."

No, we have our share of troubles in Louisiana, but we will have to refute the Professor's statement with regard to surra. Nor do we believe, as is the opinion of Dr. Nockolds,

that the disease exists, or ever has existed, in this country—except in the case of the zebu cattle that were imported from India, but where the disease was stamped out in quarantine by the representatives of the National Bureau of Animal Industry.

Incidentally, I might add, that “the eminent author of several of our most treasured veterinary works,” was not Prof. W. Owen Williams, but his late distinguished father, Professor William Williams, of Edinburgh, who wrote the “Principles and Practice of Veterinary Medicine,” and the “Principles and Practice of Veterinary Surgery.” At least, I am inclined to think it must be the senior member of the family whom Dr. Nockold had reference to. And we feel sure that Prof. W. Owen Williams will not at all object to our making this correction in favor of his distinguished sire.

Very sincerely yours,

W. H. DALRYMPLE, M.R.C.V.S.

CREDIT WHERE CREDIT IS DUE.

OTTAWA, CANADA, Aug. 16, 1907.

Editors American Veterinary Review:

DEAR SIRs:—In issue of the Farmers' Advocate, Winnipeg, of June 12th, the statement was made in the article on page 884 dealing with *Maladie du coit* in Alberta, under the heading of “Health of Animals Branch Scores Again,” that “several United States veterinarians and pathologists visited the quarantine station several miles out of Lethbridge to confirm or dispute the diagnosis. So far as we know the diagnosis was not confirmed by the gentlemen.” From information to hand, we were in error, as Dr. E. T. Davison, Helena, Mont., confirmed the diagnosis made by the Canadian inspectors, as may be seen by referring to the report of the Veterinary Director-General for 1904, pages 64, 67 and 69.

Very truly,

ARTHUR G. HOPKINS.

ABOUT two years ago Dr. J. F. Winchester, of Lawrence, Mass., sent in the photo and a short account of the remarkable fecundity of a cow at the Hill Farm, near Lawrence, in which there were *seven* calves born at one parturition. This remarkable cow has again been delivered of *five* calves at one accouchement.

SOCIETY MEETINGS.

VETERINARY MEDICAL ASSOCIATION OF NEW JERSEY.

The twenty-third annual meeting of the above association was held in the Assembly Room of the Columbian Club, Jersey City, Jan. 10, 1907, with Dr. T. Earle Budd, President, in the chair, and the following members in attendance:—Axford, Baldwin, Budd, Bushong, Butler, Churchill, Conover, Downs, Ferguson, Glennon, Gray, Hendren, Hogan, Holdenby, Hopper (A. G.), Hopper (J. B.), King, Laddey, Lindsay, Little, Loblein, Lockwood, Lowe (J. Payne), Lowe (Wm. Herbert), Mathews (E.), Mathews (John P.), Mecray, Meiners, Mitchell, Moody, Mosedale (James), McDonough, McIntosh, Paulin, Peterson, Pope, Rogers (Carroll T.), Rogers (Thos. B.), Runge, Sellers, Smith (Thos. E.), Stage, Treadwell, Turner, Tuttle, Vander Roest Vliet. Dr. Rufus R. Ramsay, of Jersey City, and Dr. Geo. W. Smith, of Hoboken, were also present. Visitors:—Dr. A. Clarke Hunt, State Board of Health, Trenton; Dr. Richard P. Lyman, Secretary American Veterinary Medical Association, Hartford, Conn.; Dr. C. J. Marshall, Philadelphia, Pa.; Dr. Roscoe R. Bell, Editor AMERICAN VETERINARY REVIEW, Brooklyn, N. Y.; Dr. W. Reid Blair, N. Y. Zoölogical Park, The Bronx, N. Y. City; Dr. Robert W. Ellis and Dr. H. D. Gill, New York-American Veterinary College; Dr. E. B. Ackerman, Veterinarian Brooklyn Board of Health; Drs. Kingston, Ferster, Jr., Phalen and T. F. Krey, of New York.

The minutes of the semi-annual meeting held July 12-13, 1906, at Asbury Park, were read and approved.

A cordial address of welcome was delivered by Dr. T. E. Smith, of Jersey City, to whom the Association was indebted for the use of the Columbian Club's handsome and well-adapted building. Appropriate response on behalf of the Association was made in a few well-chosen words by Dr. T. B. Rogers, of Woodbury, N. J. On motion of Dr. Paulin, Dr. Smith and his committee was given an unanimous vote of thanks for all they had done for the success of the meeting.

Dr. T. Earle Budd then delivered the presidential address in an able and eloquent manner.

The following veterinarians were proposed for membership, their applications referred to the Executive Committee, and duly elected to membership:—Otis H. Downs, D.V.S., Kansas City Veterinary College, 1904, Englewood, N. J., licensed by the State Board of Veterinary Medical Examiners of New Jersey, 1905; Henry W. Turner, V.M.D., University of Pennsylvania, 1893, Lambertville, N. J.; J. P. Bushong, V.M.D., University of Pennsylvania, 1906, Newark, N. J., licensed by the State Board of Veterinary Medical Examiners of New Jersey, 1906.

Announcement was made of the death of former President Dr. J. W. Hawk, of Newark. The President appointed Drs. Lowe, Runge and Baldwin a committee to draft suitable resolutions.

PAPERS.

"The Use of Slings in Veterinary Practice," by Dr. Geo. W. Pope, Athenia, N. J.

"Horsemanship," by Dr. J. B. Hopper, Ridgewood, N. J.

"Short Extracts from Every-Day Practice," by Dr. Otis H. Downs, Englewood, N. J.

"Meat Inspection," by Dr. S. G. Hendren, Arlington, N. J.

"The Work of the State Board of Veterinary Medical Examiners," by Dr. Wm. Herbert Lowe, Paterson, N. J.

Dr. A. Clark Hunt, of the State Board of Health, was introduced and made an interesting address.

President Budd's term as President being about to end, he was the recipient of an elegant cut-glass punch-bowl, the gift of his colleagues who presented it to him as a token of their personal regard for him and in recognition of the dignified manner in which he had presided over their deliberations. Dr. Budd was almost overcome with emotion, and for once in his life was unable to express himself as he would like to have done.

ELECTION OF OFFICERS.

The following officers were elected and installed:—

President—Dr. E. L. Loblein, New Brunswick.

First Vice-President—Dr. J. B. Hopper, Ridgewood.

Second Vice-President—Dr. T. B. Rogers, Woodbury.

Treasurer—Dr. T. E. Smith, Jersey City.

Secretary—Dr. Wm. Herbert Lowe, Paterson.

Asbury Park was chosen as the place for the semi-annual meeting July, 1907. On motion, meeting adjourned.

The semi-annual meeting of this Association was held at the Hotel Marlborough, Asbury Park, N. J., July 11-12, 1907, with Dr. E. L. Loblein, of New Brunswick, President, in the chair, and the following in attendance:—

Members:—Baldwin, Brown, Budd, Carter, Christy, Churchill, Conover, Dickson, Gall, Glennon, Harker, Height, Hopper (John B.), Kehoe, Lindsay, Loblein, Lockwood, Lowe (J. Payne), Lowe (Wm. Herbert), Magill, McDonough, McIntosh, Moody, Morehouse, Mosedale (James), Rogers (Carroll T), Rogers (Thos. B.), Rowe, Jr., Smith (Thos. E.), Thompson, Vliet.

Ladies:—The following ladies were guests of the Association:—Mrs. R. W. Carter, Jobstown, N. J.; Mrs. Geo. F. Harker, Trenton, N. J.; Mrs. V. B. Height, Asbury Park, N. J.; Mrs. John B. Hopper, Ridgewood, N. J.; Mrs. Wm. Herbert Lowe, Paterson, N. J.; Misses Kittie and May McDonough and Miss Gallagher, Montclair, N. J.; Mrs. A. H. McIntosh, Summit, N. J.; Mrs. A. A. Moody, Mount Holly, N. J.; Mrs. Geo. H. Berns and daughter, Brooklyn, N. Y.; Mrs. Roscoe R. Bell and children, Brooklyn, N. Y.; Mrs. W. Reid Blair, N. Y. City; Mrs. J. E. Ryder and daughter, N. Y. City; Mrs. Robert W. Ellis, N. Y. City; Mrs. H. Nagle, Undercliffe, N. J.; Mrs. Haversick, N. Y. City.

Other Visitors:—Hon. Franklin Dye, Secretary State Board of Agriculture, Trenton, N. J.; Jos. B. Ward, M.D., member State Tuberculosis Commission, Newark, N. J.; Mr. Sears, a prominent dairyman; Dr. Olcott; W. Reid Blair, D.V.S., Veterinarian N. Y. Zoölogical Park, Bronx; Mr. E. R. Sanborn, Commissioner of the N. Y. Zoölogical Park, Bronx; Roscoe R. Bell, D.V.S., Editor AMERICAN VETERINARY REVIEW, Brooklyn, N. Y.; A. M. Bell, M.D., N. Y. City; Geo. H. Berns, D.V.S., Brooklyn, N. Y.; E. B. Ackerman, D.V.S., Veterinarian Brooklyn Board of Health; C. E. Clayton, D. V. S., N. Y. City; Robert W. Ellis, D.V.S., New York-American Veterinary College, N. Y. City; Captain Wm. F. Kirchner, Asbury Park, N. J.; Mr. Haversick, N. Y. City; L. J. Belloff, D.V.S., New Brunswick, N. J.; T. F. Krey, D.V.S., Secretary New York-American Veterinary College Alumni Association, N. Y. City; J. E. Ryder, D.V.S., New York-American Veterinary College, N. Y. City.

The minutes of the twenty-third annual meeting, held at the Columbian Club, Jersey City, Jan. 10, 1907, were read and approved.

President Loblein presented an able address, in which he referred to the many and diversified public questions demanding attention of the veterinarian at the present time in our state. He took occasion to criticize state officials who were attempting to deal with problems that belong to the domain of veterinary science without possessing the scientific qualifications of the trained veterinarian. President Loblein pointed out the growing necessity of specialism in the veterinary profession whose scope is so broad as to be beyond the possibilities of the general practitioner. He advocated the institution of special courses in our educational institutions with a view of better fitting men for special work. Legislation had done some good. Education and special fitness had done more. The President said that the work of the American Veterinary Medical Association was deserving of the highest commendation and that the general improvement in the curriculum of the various veterinary colleges in the United States and Canada, and the short life of institutions of the mushroom order was largely due to its censorship. Dr. Loblein also stated that the work of the State Board of Veterinary Medical Examiners is worthy of the profession's highest commendation. He was gratified with the character and fairness of the examinations as conducted by the State Board and with the success it has had in ridding the state of illegal practitioners.

NEW MEMBERS.

The following veterinarians were proposed for membership. Their applications were referred to the Board of Censors who reported favorably and they were duly elected:—Chas. S. Thompson, D.V.S., New York-American Veterinary College (N. Y. University), 1904, Rahway, N. J., licensed by the State Board of Veterinary Medical Examiners of New Jersey, 1905; Robert W. Carter, V.S., Ontario Veterinary College, 1883, Jobstown, N. J., registered under the laws of New Jersey, 1889; Walter G. Morehouse, D.V.M., New York State Veterinary College (Cornell University), 1907, licensed by the State Board of Veterinary Medical Examiners of New Jersey, 1907.

Secretary Lowe presented the name of Dr. A. D. Melvin, Chief of the Bureau of Animal Industry, U. S. Department of Agriculture, Washington, D. C., for honorary membership. The

application was signed by three members of the Association as required by the by-laws. The Executive Committee reported favorably and Dr. Melvin was elected by an unanimous vote.

REPORT OF COMMITTEE ON LEGISLATION.

The Legislation Committee reported the arrest, indictment, and conviction of Dr. Fred. M. Eason, Englewood, N. J., who claimed to be a graduate of the Royal College of Veterinary Surgeons, London, England, for practicing veterinary medicine in New Jersey without a license from the State Board of Veterinary Medical Examiners as required by the laws of New Jersey. The Court imposed a fine of \$100 upon Dr. Eason for disregarding the laws of New Jersey.

George Locke, V.S., Flemington, N. J., who has been twice indicted by the Grand Jury for practicing veterinary medicine illegally and who escaped the Sheriff of Hunterdon County, is now behind the bars.

Asa Thomas, V.S., South Amboy, N. J., a graduate of the correspondence school at London, Ontario, persisted in practicing in open violation of the laws of New Jersey, has been arrested and is held for the action of the grand jury of Middlesex County.

The Committee also reported the killing of a bill that had been introduced in the last Legislature to allow a non-qualified man to register.

The Committee reported the preparation of a bill consolidating the veterinary service of the state and placing it under veterinary direction; and that it was the intention of the Committee to have the bill in shape for final approval and legislative action at the coming session of the Legislature.

SPECIAL COMMITTEE.

The work of the State Tuberculosis Commission as conducted under the existing law appeared to be unsatisfactory to members of the Association and Veterinarian Edward Rowe, Jr., Health Officer of the City of Summit, N. J., made the following motion which was adopted:—"That the President appoint a committee of three to confer with the Tuberculosis Commission and make such recommendations and suggestions as to them may appear expedient to better and improve the service now being rendered by said commission."

RESIGNATION CHAIRMAN COMMITTEE ON LEGISLATION.

At the request of the Secretary, the President read the resignation of Dr. Wm. Herbert Lowe as chairman of the Committee on Legislation. The Association refused to entertain the resignation and by a unanimous vote requested him to continue to serve the Association in his present position as chairman of said committee.

COMMITTEE ON OBITUARY RESOLUTIONS.

The Secretary reported the death of Dr. R. O. Hasbrouck, of Passaic, N. J., which occurred Jan. 14, 1907, and that a suitable floral piece had been sent to his funeral. The President appointed Drs. McDonough, J. Payne Lowe and Lockwood a committee to draft obituary resolutions.

STANDING COMMITTEES, 1907.

Executive—Drs. T. Earle Budd, *chairman*; J. Payne Lowe, Glennon, Conover, T. B. Rogers.

Legislation—Drs. Wm. Herbert Lowe, *chairman*; Budd, T. B. Rogers, T. E. Smith, Vander Roest, Harker, Gray.

Public Health—Drs. Werner Runge, *chairman*; Ripley, Tuttle, Hendren, Voorhees.

Animal Industry—Drs. Geo. W. Pope, *chairman*; English, Mecray, Horner, James Mosedale.

Finance—Drs. John B. Hopper, *chairman*; Baldwin, Paulin.

Publication—Drs. Geo. B. Vliet, *chairman*; McDonough, Downs.

PAPERS AND DISCUSSIONS.

Papers were read and discussed as follows:—

"The Veterinarian and His Patients in Literature," by Dr. Thos. B. Rogers, Woodbury, N. J.

"The Practical Workings of the Agglutination Test for Glanders," by Dr. Geo. H. Berns, Brooklyn, N. Y.

"Clinical Report," by Dr. Edward Rowe, Jr., Summit, N. J.

"Agricultural and Public Health Problems Confronting the Veterinary Profession," by Dr. Wm. Herbert Lowe, Paterson, N. J.

"The Work of the State Tuberculosis Commission and Present Conditions," by Hon. Franklin Dye, Trenton, N. J.

"The Milk Question from the Milkmen's Standpoint," by Mr. Sears.

WM. HERBERT LOWE, *Secretary*.

OHIO STATE VETERINARY MEDICAL ASSOCIATION.

This Association convened for its twenty-fourth annual session, at the Great Southern Hotel, Columbus, O., on Tuesday, Jan. 22, 1907.

Meeting called to order at 1.45 P. M., with President W. A. Axby in the chair.

Dr. Axby introduced Mayor Badger, who gave us a hearty and welcome invitation to the city. Dr. Louis P. Cook, replying to the address of welcome, took occasion to remind the veterinarians present that we had a State law against illegal practitioners, and which no effort was being made to enforce.

THE ATTENDANCE.

The roll-call showed the following members present: W. A. Axby, Harrison; J. H. Blattenburg, Lima; H. W. Brown, Columbus; O. V. Brumley, Columbus; S. E. Bretz, Nevada; T. B. Cotton, Mt. Vernon; L. W. Carl, Columbus; G. W. Cliffe, Upper Sandusky; L. P. Cook, Cincinnati; W. E. Clemons, Granville; W. R. Clark, Wauseon; E. H. Callender, Zanesville; J. W. Choate, Columbus; Norton Dock, Columbus; F. H. Dettman, Troy; J. D. Fair, Berlin; Harry Fulstow, Norwalk; C. B. Frederick, Canton; J. L. Faragher, Lorain; J. E. Foster, Coshocton; W. H. Gribble, Washington C.H.; A. D. Gemmill, Celina; T. B. Hillock, Columbus; N. W. Hillock, Columbus; W. R. Howe, Dayton; R. C. Hill, West Alexandria; E. O. Hess, Elyria; E. E. Inskeep, Urbana; J. E. Johnson, Piqua; M. J. Jones, Jr., Blanchester; G. W. Kinsey, Wheeling, W. Va.; W. A. Labron, Xenia; C. E. Leish, Columbus; C. E. Langdon, Sabina; S. D. Myers, Wilmington; J. A. Meagher, Glendale; Fred Miller, Ft. Recovery; H. M. Manley, Dayton; E. L. Metzger, Louisville; L. H. Maynard, Columbus; H. W. McMillen, Brookville; M. C. McClain, Jeromesville; J. V. Newton, Toledo; L. Smalley, Loudenville; Walter Shaw, Dayton; E. H. Shepard, Cleveland; F. F. Sheets, Van Wert; Sept Sisson, Columbus; L. A. Severcool, Elyria; W. H. Turner, N. Amherst; D. H. Udall, Columbus; D. S. White, Columbus; W. B. Washburn, Tiffin; I. A. Wynn, Kenton; W. C. Webb, Akron; H. L. Williams, Newark; W. E. A. Wyman, Covington, Ky.; W. E. Wright, Pittsburg, Pa. Quite a goodly number of visitors, among them Dr. D. A. Piatt, Lexington, Ky.; Dr. L. Meyer and Dr. R. C. Swetman, Covington, Ky.; Dr. H. E. Mevers, Carey, O.; Dr. J. A. Planz, Akron, O.; Dr. G. M. Rogers, Forest, O.; Dr. M. B. Lamb, Columbus, O.;

Dr. W. Sanderson, Sidney, O.; Dr. H. T. Moss, Germantown, O.; Dr. Z. W. Seibert, Crestline, O.; Dr. Geo. W. Rogers, Foust, O.; Dr. C. W. Secoy, Athens, O.; Dr. E. E. Bell, Nelsonville, O. Others we failed to obtain the names of.

Minutes of the previous meeting read and approved.

President W. A. Axby followed with an excellent annual address.

The Secretary called attention to the fact that since our last meeting death had taken from us a member, Dr. Constant Lake. Dr. Hillock reminded the Association that the profession had also lost another and well-known member, Dr. H. J. Detmers. The Chair appointed a committee to draft suitable resolutions and to report later.

The Treasurer reported a balance in the Treasury at the opening of this session of \$225.

Report of Committee on Veterinary Diseases was rendered verbally by its Chairman, Dr. E. H. Shepard.

Report of Committee on Veterinary Progress was rendered verbally by its Chairman, Dr. J. V. Newton.

Committee on Clinics and Arrangements stated that a banquet would be held at the Great Southern Hotel this evening at 8.30 P. M. Clinics at the Veterinary Hospital at the Ohio State University to-morrow morning.

ELECTION OF OFFICERS.

Nomination and Election of Officers followed. There being but one nomination for each respective office, the rules were suspended and each in turn declared elected:

President—Dr. C. B. Frederick, Canton.

Vice-President—Dr. Harry Fulstow, Norwalk.

Treasurer—Dr. T. B. Hillock, Columbus.

Secretary—Dr. Wm. H. Gribble, Washington C. H.

Censor—Dr. G. W. Cliffe, Upper Sandusky.

The Censors now are—Drs. Brumley, Fair, Cliffe.

A discussion on illegal practitioners followed, which threatened to take up all the time of the meeting. A motion was made, duly seconded, that a committee be appointed to ascertain what funds could be raised. An amendment was offered and when put to vote declared carried: That an assessment of \$5 be levied on each member as a special fund for prosecuting illegals. A special committee, composed of Drs. D. S. White, T. B. Hillock and L. W. Carl, were appointed to confer with

an attorney as to methods, prospective expenses, etc., and report to the Association this evening. Motion was adopted that whenever a conviction was obtained that the Secretary be notified, given full particulars, and he in turn notify every member of this Association.

PAPERS AND DISCUSSIONS.

Dr. E. O. Hess now read his paper, "Effect of Medicated Stock Food on Dairy Products."* This paper brought out some very interesting medical and physiological points, which were debated at great length.

Interesting cases by Dr. F. E. Anderson, who was unable to attend, having been confined to his bed for three months with inflammatory rheumatism, as follows:

INTERESTING CASES IN PRACTICE.

"*Case I.*—A two-year-old Durham steer that was noticed to have a circumscribed swelling in the muscle about six inches below the ischiatic tuberosity, which was about the size of a hen's egg when first noticed by the farmer, and upon examination was apparently loose in the muscle and hard, without sign of any injury, not even a hair was missing. Steer had been on grass and in fine condition. I was called to see him about three weeks after the enlargement was first noticed, and at that time the tumor was about the size of a man's head, the whole quarter and leg swollen to an enormous size; tumor entirely devoid of sensation, which I discovered by cutting through it to a depth of about eight inches, the walls of which were very hard, apparently composed of fibrous tissue with no flow of blood to speak of and no center or nucleus for a starting point of the growth. Animal still eating well, but had no use of the affected leg. Lost appetite in four days after seeing him and began to swell under abdomen, which extended to foreleg, when he was found dead in the barn. Please tell me what the trouble was. No elevation of pulse nor rise in temperature. The day I examined him, the urinary organs and bowels were in good condition.

"*Case II.*—I also held a post-mortem on a black gelding that was in good condition at time of death, which showed colicky pains for ten hours previous to death, and found his liver would not go in a bushel basket and weighed 105 pounds and very solid, with a spleen that was three feet long and weighed 58

*Published in the July REVIEW.

pounds, also very firm and solid. The surprising part to me was the apparent good health of the animal up to a few hours before death.

"Case III.—Another case was a five-months-old draft colt, in the pink of condition, fat and sleek; had never showed any signs of disease until two hours before death, when it exhibited signs of distress, which were not very severe. Post-mortem revealed one kidney entirely broken down and partially liquified. Within its capsule and the capsule of the other one, loose over about one-third of the kidney and the organic tissue in a semi-liquid condition. About one-half of an inch of the kidney was affected, while the balance of the organ was to all appearance healthy. Every other part of the animal was in perfect condition apparently. What was it?

"Case IV.—Chestnut gelding, 15 years old, always very fat, a great road horse, never sick or missed a feed in twelve years, while owned by the possessor at death. Had eaten his grain and hay at supper. Was found in the morning standing with a distressed look and trembling, with rapid breathing. I was called in about 9 A. M., and diagnosed the trouble as a ruptured bowel. Gave treatment to alleviate suffering, which death came to relieve about 7 P. M. Post-mortem disclosed small rupture about half an inch in diameter from small bowel in to or rather between the serous folds of the mesentery, through which had passed about one-half a bushel of the contents of the bowel, also fourteen perfect tape-worms about twelve inches long, each having a head with four suckers. Did the worms have anything to do with the rupture?"

Cases No. I., II., III. brought out in the debate a great difference of opinion. So we, with the writer, ask your readers to diagnose them for us. Give us the benefit of your views.

Dr. J. E. Foster read a short paper, "Interesting Cases to Me,"* which certainly were interesting cases for all who heard the paper.

Dr. G. W. Cliffe exhibited a specimen and read a short paper, "Carcinoma of Stomach; If Not, What?"† Dr. Cliffe was thanked by the members for going to so much trouble to exhibit to them a fresh specimen.

The Secretary read a paper, "Veterinary Correspondence Schools," including some correspondence carried on with these places of learning.

*Will be published in an early number of the REVIEW.

†Published in August REVIEW.

After the discussion that followed, a motion prevailed: That a committee of three be named, who should correspond with the Postmaster-General and ascertain if such schools could not be prohibited the use of the mails, etc. Chair appointed Drs. D. S. White, W. E. A. Wyman and W. B. Washburn.

Adjourned to meet at banquet table at Great Southern Hotel at 9.00 P. M.

After partaking of the good things, cigars were brought in. The Chair called for the report of the Special Committee on Attorney for Prosecuting Illegals. The committee reported that they had conferred with a young attorney, well connected with the legal profession and he had offered to prosecute any case brought to his attention for certain prescribed fees. After some debate, motion prevailed: That the report of the committee be accepted.

A short recess was taken in order to give the Secretary time to collect the special assessment of \$5 each from those desiring to pay at once. \$200 was collected.

Dr. W. E. A. Wyman now read a paper, "Veterinary Data of 1906." This paper took a wide range of subjects; was very attentively listened to, and many questions asked of the writer, all of which he did his best to answer.

An interesting and instructive paper on "Inspection of City Milk and Dairies," by Dr. L. H. Maynard next followed. From remarks which followed the reading of this paper, it was evident that many of our members lived in cities where politics dominated the quality of the milk and meat.

Dr. W. Shaw exhibited a number of photos of interesting cases, explaining each one as he passed the photos around.

Dr. Gribble exhibited three specimens, "Injury to Bones," with specimen of each, and description of each case.

Dr. Frederick exhibited quite a rare specimen of a tooth with description of the case.

The Chair appointed the following as an auditing committee: Dr. S. D. Myers, Dr. W. E. Clemons and Dr. Norton Dock. After which we adjourned to meet at the Veterinary Department of the University at 8.30 to-morrow morning.

Meeting called to order by the President at 9 A. M. Report of the Committee on Nicrology called for.

REPORT ON THE DEATH OF DR. C. LAKE.

Dr. Constant Lake was born in Wooster, Ohio, May 29, 1849. Graduated from the Ontario Veterinary College in 1888,

engaged in practice in Portsmouth, Ohio, where he died of valvular disease of the heart, on March 15, 1906. He was one of the best known residents of his adopted city, a most exemplary citizen, with many, many friends, who miss his presence. He was a most ardent lover of the horse, and in his death we feel that not only has this Association lost an honored member, but Ohio has lost a capable veterinarian.

"Resolved, That this Association extend to the family and friends our sincere sympathy in this their bereavement, and

"Resolved, That a copy of this preamble and resolutions be sent to the family, and also spread upon the minutes as part of the records.

"S. D. Myers, W. Shaw and E. H. Shepard, Committee."

ON THE DEATH OF DR. H. J. DETMERS.

"WHEREAS, Death has removed from us, on December 11, 1906, Dr. H. J. Detmers, of Columbus, Ohio, a veterinarian of great literary and scientific training and ability, an educator of international reputation and one of the pioneer scientific veterinarians of the United States, a man who ever had at heart the welfare of our profession and who labored with untiring zeal for its uplifting in Ohio, and

"WHEREAS, We feel that through his death the veterinary profession has suffered an irreparable loss, and

"WHEREAS, We not only deplore his death as a member of our profession, but as a friend and man of true and noble character;

"Resolved, That the Association extend his bereaved family in their affliction the sincere sympathy of its members, and be it further

"Resolved, That these resolutions be entered in the records of this Association and a copy sent to his family.

"Sidney D. Myers,

"Paul Fischer,

"Walter Shaw,

"E. H. Shepard,

"Committee."

REPORT OF THE AUDITING COMMITTEE.

"The committee to audit the books of the Secretary and Treasurer beg leave to report as follows:—Balance on hand end of twenty-second annual session, \$360.70; receipts for twenty-

third annual session, \$147.00; total, \$507.70. Expenditures for twenty-third annual session, \$282.70; balance on hand, \$225.00. This of course does not include the receipts and expenditures of the present (twenty-fourth) annual session. We have here the expense account (including Secretary's salary) for \$78.85, and recommend that the same be allowed. We find that the accounts of the Secretary and Treasurer agree, and the books are kept in a neat and businesslike manner.

"Sidney Myers,
"W. E. Clemons."

PAPERS CONTINUED.

A short paper by Dr. H. Fulstow, "Infectious Ophthalmia of Cattle and Sheep." In the debate following, it seems that nearly all animals affected get well; some few becoming blind in one eye.

The Secretary now read

PROPOSED AMENDMENTS TO THE CONSTITUTION AND BY-LAWS:

"The undersigned give notice of proposal of the following amendments to the Constitution of the Ohio State Veterinary Medical Association: To substitute the word 'thirty' for the word 'ten' in Article V., Section 14. W. E. Clemons, J. D. Fair, S. Sisson, C. B. Frederick, W. B. Washburn, G. W. Cliffe, S. E. Bretz, M. J. Jones." This has reference to the number necessary to constitute a quorum.

"We, the undersigned members of the Ohio State Veterinary Medical Association, hereby propose that Sec. 2 of Art. V. of the Constitution be amended to read as follows: 'An annual session to be held during January of each year, at such time and place as the officers may select; unless the same shall have been agreed upon at the previous annual session.' J. A. Meagher, Louis P. Cook, T. B. Hillock, E. O. Hess, C. E. Inskeep, J. E. Johnson, J. L. Faragher, W. E. A. Wyman."

"We propose the following amendment to the By-laws: Chap. I., Art. V., Sec. 2, to read: 'The annual dues of this Association shall be two dollars (\$2.00), payable in advance at the annual meeting.' J. V. Newton, T. B. Hillock." Dues are now only one dollar (\$1.00) per year.

APPLICATIONS FOR MEMBERSHIP.

The following were referred to the Board of Censors and recommended by them that they be elected. There being no objections, the rules were suspended and the Secretary ordered

to cast the ballot for the members named:—John V. Planz, Arken (O. S. U., '04); Adolph G. Falk, Cheviot (Cin. V. C., '06); H. T. Moss, Germantown (Cin. V. C., '05); H. E. Myers, Carey (Ontario V. C., '05). Each new member present being called upon made a few appropriate remarks.

No further business appearing, the newly-elected officers were conducted to their seats, after which the President appointed the following committees:

Veterinary Progress—Drs. S. D. Myers, D. S. White, F. F. Sheets.

Veterinary Diseases—Drs. Paul Fisher, E. O. Hess, Harry Brown.

Clinics and Arrangements—Drs. L. W. Carl, N. W. Hillock, O. V. Brumley.

The question of a semi-annual meeting was brought up, when Dr. Axby stated he wished we could bring about a tri-state meeting. Nothing further, the Association adjourned, to attend the clinics prepared at the Veterinary Hospital.

WM. H. GRIBBLE, *Secretary*.

GEORGIA STATE VETERINARY ASSOCIATION.

In accordance with a call of the officers, the semi-annual meeting of the Georgia State Veterinary Association convened in the parlors of the Kimball House, Atlanta, Ga., on July 4th, being called to order at 3 P. M., with the President, Dr. Peter F. Bahnsen, of Americus, in the chair, and Secretary C. L. Wiloughby at the desk. The following members and visitors were present: Drs. J. N. Cook, C. D. Coker, W. E. Carnes, H. G. Carnes, C. R. Jolly and H. J. Schwartz, of Atlanta; Dr. T. E. Jago, of Athens; Dr. J. E. Miller, of Gainesville; Dr. E. D. Gleason, of Macon; Dr. J. C. Schwencke, of Thomasville; Dr. Louis Friedheim, of Rock Hill, S. C.; Drs. C. A. Cary and Ward Giltner, of Auburn, Ala.; Dr. Cooper Curtice, of the B. A. I., Raleigh, N. C.; Messrs. W. Bates, of Zebulon, and H. P. Short, of Whitesburg, Ga.

The President gave his regular address to the Association as follows:—

“GENTLEMEN—We have again assembled to strengthen the bonds of professional unity which bind us inseparably together, to give and receive encouragement for the pursuit of our daily vocation, to review the progress of our profession and more

especially to deliberate over proposed veterinary legislation which it is our hope to see enacted by the General Assembly now in session.

"The founding of this Association, yet but nine months old, marks the first successful attempt to rally the veterinarians of this State in a mighty effort to secure for our ancient and honorable profession such recognition as we deserve and justice demands. I say ancient profession, because the very foundation of medical science rests upon research and experiment with lower animals.

"Especially among the nomadic tribes of India did the profession prosper, and veterinary hospitals were established as early as 1000 B. C. For a while medicine, both human and veterinary, remained in the hands of one class; but later the most successful practitioners devoted themselves exclusively to the affliction of mankind, leaving the diseases of animals to the less skillful. Nearly all ancient writers have, by their writings, admitted active interest in comparative medicine; yet, as a distinct and independent profession we owe our existence to the labors of Claude Bourgelat, whose influence and great learning prompted the French Government to open, in 1762, the first veterinary school at Lyons. The crying necessity of such an institution soon became apparent and the establishment of the schools at Alford (65), Kopenhagen (73), Dresden (74), Wien (77), Hanover (78), Budapest (86), Berlin and Munchen (90), London and Milan (91), and at Madrid in 1793 speak eloquently of the demand for its graduates.

"In America, the land of opportunity, all early ventures to establish a veterinary school were doomed to failure, the first institutions to withstand the storm of adversity being the New York College of Veterinary Surgeons, chartered in 1857, Ontario Veterinary College in 1862, and the American Veterinary College, chartered in 1875. Subsequently many recruits have joined the ranks and to-day we point with pride to Ithaca, Philadelphia, Columbus (Ohio), Chicago, Kansas City, Pullman (Washington), and others. This, in brief, is a historic sketch of veterinary rise and decay; and its regeneration among the sciences of to-day.

"Our profession is honorable, not only by reason of alleviating suffering among the domestic animals; but in our capacity as sanitarians, to which our education preëminently fits us, we are able to earn and maintain the esteem of mankind.

"Up to date the profession has, in this State, been followed unrestricted by all who cared to offer their services to an indulgent people *to the shame of our profession and the detriment of the public*; but the organization of our association marked a parting of the ways. Our aim in organizing was void of personal interest except in so far as involved the standard of our profession; restricting our membership to graduates exclusively was not, and is not, any indication of personal grievance against anyone, but simply marks the requirements essential to admission. It is our earnest desire to improve the veterinary service in Georgia and to that end we have, as previously stated, met on this occasion to deliberate over and propose, to the General Assembly now in session, such laws as prevailing conditions justify. Than you, none are better qualified to judge the necessity, nature and extent of legislation required to rescue the people from an already large army of fakirs which, by reason of veterinary laws enacted in other States, is steadily increasing.

"To rigidly exact of all who now practice documentary evidence of their qualification might, and no doubt would, result in a flood of opposition by the friends of those who have for years, perhaps with a certain degree of success, administered succor to the afflicted live stock in their community; but it seems to me the veriest tyro could not be offended by, or offer reasonable objection to, an examination looking into the qualification of anyone desiring to practice Veterinary Medicine within this State. Neither can I understand how anyone, with or without diploma, should desire to continue the pursuit of a vocation the fundamental principles of which are unknown to him.

"The Examining Board, should the Legislature look favorably upon our request, must be composed solely of veterinarians—skilled in their profession and of unshakable integrity—since it is absolute folly to suppose that anyone not so qualified could intelligently pass on the qualification of candidates seeking permission to practice. Just how, when, and by whom, those men are appointed is of little or no interest, but no one should be permitted to fill this position without the endorsement of the Georgia State Veterinary Association. This would in no way involve the association in politics, but merely act as a safeguard concerning fitness and qualification of aspirants to this office of trust and distinction.

"To-day Georgia stands almost alone without the services of a regularly employed State Veterinarian to look after the

welfare of her ever-increasing live stock interest. This position is one of great responsibility and requires the services of one well versed in infectious diseases and sanitary police; in addition, he should be a man of more than ordinary executive ability because the work before him demands plans carefully laid and vigorously executed.

"Our present Veterinary Act is worse than a sham. Of this my connection with the Department of Agriculture has thoroughly convinced me. No practitioner maintaining an infirmary, of even moderate proportion, the success, or failure, of which depends on his own supervision, can afford to abandon his private practice for the compensation offered by the State without making a personal sacrifice. This, however, is the smallest objection to the present system; of decidedly greater importance is the fact that at its best the State cases receive but half-hearted attention, since at every turn the State's emissary is acquainted with the fact that there is no law to support him in his rulings and his instructions. Men will piously require of their neighbor the observance of the golden rule, will eloquently tell you of the right that wrongs no one; but if they are victims of misfortune and your decision should call upon them to offer sacrifice for public good their demeanor is instantly changed; their cunning and evasiveness would do credit to the noble (?), lying redman of frontier fame; their subterfuges and defies baffle the skill of legal procedure.

"What we need is a sanitary law, couched in concise and unmistakable terms, providing in its text rules and regulations for investigations, quarantine and suppression of all contagious or infectious diseases among animals. Since the effectiveness of such a law must depend on those who, by virtue of their office, hold the guiding hand in these matters the necessity of executive ability in a State Veterinarian becomes at once of paramount importance.

"To reiterate, Georgia needs the following veterinary legislation:

"1. An Act to define and regulate veterinary practice in this State.

"2. An Act providing for the creation and maintenance of a Veterinary Examining Board.

"3. An Act creating the office of State Veterinarian; defining his duties, salary and term of office.

"4. The enactment of a law which, if enforced, would enable the suppression of infectious diseases of all animals within our borders.

"That, with the proper amount of push, each of these acts will pass is to me reasonably certain; in advocating it we are primarily promoting the interest of the masses.

"In his inaugural address his Honor Governor Hoke Smith advocated the separation of the State Agricultural College from the academic department of the University. Why not endeavor to establish in connection with this state institution a veterinary department whose graduates shall be second to none, if instruction and opportunity count for anything. The rapidly increasing live stock interest of our commonwealth, as well as the pressing demand for men skilled in our profession, amply justify the venture, and I see no reason why the South should not offer its rising generation ample opportunity to enter the field of comparative medicine instead of depending on the North and West to supply the demand."

Dr. J. C. Schwencke presented a paper on "Azoturia," recommending increasing peristalsis and neutralizing the poison in this trouble.

Dr. C. D. Coker, of Atlanta, read a paper on "Milk Fever," recommending the distention of the udder with air, and a hypodermic injection as stimulant.

The Association then heard an address by Dr. Cary, of Alabama, upon the subject of "Veterinary Medicine and Surgery in the South." Announcement was made that the Alabama Polytechnic Institute had just established a School of Veterinary Science, with a three-year course of study, the first of its kind in the South.

Dr. Cooper Curtice consented to speak for a short time on the work of the Bureau in eradicating Texas fever in the South. The remainder of the evening was spent in general discussions and social intercourse among the members.

On the second day, July 5th, the Association paid its respects to Hon. Hoke Smith, the new Governor of Georgia, after which a couple of hours were spent at the hospital of Dr. Jolly in clinic and demonstration work.

At 11 A. M. the meeting reassembled at the Kimball House.

Upon the recommendation of the Membership Committee, Dr. E. D. Gleason, of Macon, and Dr. H. J. Schwartz, of Atlanta, were received into regular membership.

Dr. Jolly then gave a talk on "Veterinary Operations," in which he advised avoiding tedious operations as unprofitable to owners. This opinion was the cause of much discussion, and Dr. Jolly was taken somewhat to task.

Dr. H. G. Carnes gave an interesting paper on "Shoeing for City Work and for Foot Diseases."

One of the most valuable papers was read by Dr. Ward Giltner, of Alabama, on "Diagnosis of Rabies," describing the method of locating Negri bodies in the brain.

Adjournment was taken for dinner, and arrangements made for a visit to the Pasteur Institute in Atlanta for treatment of rabies. At 2.30 P. M. the members went in a body to the Institute, and were shown through the various departments by the Superintendent, Dr. J. M. Brawner.

The members reassembled at the Kimball House at 4 P. M. for a business session. A bill to define and regulate the practice of veterinary medicine in Georgia and to create a Veterinary Examining Board, was read and approved, and put in further charge of the Legislation Committee to be enacted into law. A bill revising the statutes of Georgia relating to the control and suppression of contagious diseases and making an appropriation for the services of a State Veterinarian in the State Department of Agriculture was also read and approved, and a communication read from the officers of the Georgia Dairy and Live Stock Association to the effect that this bill would be introduced and urged before the Legislature by the latter Association.

By unanimous vote, the following names were added to the list of honorary members of the Association: Dr. Cooper Curtice, of the United States Bureau of Animal Industry, Raleigh, N. C.; Dr. C. A. Cary, State Veterinarian of Alabama and Professor of Veterinary Science in the Alabama Polytechnic Institute, Auburn, Ala.; Dr. Ward Giltner, Assistant State Veterinarian of Alabama, also at Auburn.

It was voted to hold the next meeting of the Association during the holiday week next December at Auburn, Ala., with the faculty of the new School of Veterinary Science there; unless for urgent reasons the officers should deem it necessary to call the meeting to convene in Atlanta again. Adjournment was taken at 8 P. M.

C. L. WILLOUGHBY, *Secretary*.

NORTH CAROLINA VETERINARY MEDICAL ASSOCIATION.

The Sixth Annual Convention of the Association, together with the State Board of Examiners, met in Charlotte, N. C., July 3 and 4, with President Roberts in the chair. The following officers and members were present: President, Dr. G. A. Roberts, Raleigh; Vice-President, Dr. W. C. McMakin, Raleigh; Secretary, Dr. Geo. Fleming, Winston; Treasurer, Dr. Adam Fisher, Charlotte; Drs. Tait Butler, Raleigh; T. B. Carroll, Wilmington; Fred Misenheimer, Salisbury; G. P. Cranford, Winston. Visitors—Drs. E. P. Henderson, U. S. Gov. Inspector; J. S. Butler, Raleigh; M. J. Ragland, U. S. Government.

The afternoon session was called at 1.30, when Mayor S. S. McNinch delivered an address of welcome, which was responded to by Dr. Tait Butler. The regular business was suspended for the afternoon in order that the State Board could examine the applicants for license. The following gentlemen presented themselves for same, were found proficient, and granted license: Drs. Fred Misenheimer, Salisbury; C. E. Smith, Newbern; Watt Ashcraft, Monroe; Roy Wolfe, Hickory; H. E. Hungerford, Washington, D. C.; J. W. Merritt, Wilson.

At 7.30 P. M., President Roberts rendered his remarks, touching upon various diseases met with in the State during the past year. There were no serious epizootics of any description, but owing to the wet weather of the previous fall there followed an outbreak of mycotic stomatitis in nearly all the western and southeastern portions of the State. Naturally, the disease being a mild one, there was no difficulty in its eradication by preventing the cattle from gaining access to the pastures for the time being. With a great deal of moldy feed (and there was a large quantity of shelled corn shipped to North Carolina this season in this condition) we have had more or less trouble with mycotic poisoning cases. Dr. Roberts read a paper on tuberculosis, referring to many of the recent discoveries and calling particular attention to the fact that, in order to protect the public against tuberculosis, it was absolutely necessary to observe the utmost cleanliness in the cow-barn, as it has been demonstrated that the fæces from infected cows were loaded with the bacilli, and as dissolved cow manure is the nightmare of the milk inspector it behooves that individual to invent some practical plan to produce milk without that necessary (?) adjunct. The discussion

lasted until 11 o'clock, when the meeting adjourned to meet the next morning at 10 o'clock.

Dr. W. C. McMakin read his paper on "Injuries and Veterinary Surgery," remarking that the dissection of a dead animal does not necessarily qualify one to operate on the living, and that, for this reason, veterinary colleges should hold as many different operations during the school year as is possible, as it has been the Doctor's experience to find that young graduates know very little about operative surgery, due largely to the lack of such training while at college.

Dr. Tait Butler then spoke on the eradication of the Texas fever tick from North Carolina. The state authorities are being assisted by the Government, an appropriation having been made for that purpose. There are now about fifteen inspectors in the field. A house-to-house canvass is made in an infected district, and farms quarantined when infected. An emulsion of crude Texas Beaumont oil is sprayed over the cattle to kill the ticks and repeated in about three weeks, and then removed to another pasture according to the starvation method. Veterinarians must assist in educating the public in tick eradication, as there is always more or less opposition when a farmer does not understand why it is necessary to work with his cattle when he has seen ticks on them all their lives. Nearly eight counties below the line are now being worked. Dr. Butler said if the U. S. Government would appropriate the money, the ticks could be eradicated from the United States in ten years, and as the price of beef from below the line is from one to two cents a pound less than that above, it is obvious what this would mean to the South.

Dr. E. P. Henderson then briefly outlined the work in the state as directed by the Bureau.

The following officers were elected for the ensuing year:

President—G. A. Roberts.

First Vice-President—W. C. McMakin.

Second Vice-President—Watt Ashcraft.

Secretary—Adam Fisher.

Treasurer—B. L. Griffin.

Drs. Roy Wolfe, J. W. Merritt, C. E. Smith, H. E. Hungerford and Watt Ashcraft were elected members of the Association, while Drs. E. P. Henderson, J. S. Butler, M. J. Ragland, A. J. Kiernan and Harry Caldwell were elected honorary members.

The convention adjourned at 5 P. M., July 4th, to meet in Raleigh, N. C., July 2d and 3rd, 1908.

A. FISHER, *Secretary*.

GENESEE VALLEY VETERINARY MEDICAL ASSOCIATION.

The tenth semi-annual meeting was held at the Veterinary Hospital of Dr. Tegg, on Thursday, July 12, 1907. Meeting called to order by Dr. Warren E. Stocking, President, at 10.30 o'clock when the following members responded to the roll-call:—Drs. J. C. McKenzie, L. R. Webber, W. G. Dodds, O. B. French, J. H. Taylor, P. J. Johnson, A. Geo. Tegg, W. B. Switzer, G. C. Kesler, Nelson N. Lefler, D. P. Webster, Warren E. Stocking, W. J. Payne, J. E. Smith, W. H. Salisbury, Carr Webber, F. D. Holford, John W. Corrigan, W. F. Woolston, John O. Moore, William H. Mahony, Newel D. Backus, and E. H. Nodyne. Visitors:—William Henry Kelly, F. E. Cleaver, H. A. Turner, B. M. Weller, A. E. Merry, Frank Tegg and George Ross.

After a brief business session a clinic was held, consisting of three ovariectomies, one poll-evil, one fistula in the flank, the sequel of puncture of the bowel; three tails straightened, one caudal myectomy to prevent gripping of the reins, one side-bone fired and blistered, one shoe-boil removed, and four operations on dogs—fifteen operations, besides several cases for examination.

A luncheon was furnished in the office for all at noon, which was disposed of in half an hour. The entire time from 11 o'clock until 5 was taken up with the clinic.

The meeting then adjourned to the Rochester Club, where an informal reception was held until 6.30, when a banquet was given, at the conclusion of which the President gave a short address, followed by several members.

W. B. Switzer reported a case of obstruction of the bowel caused by four large hair-balls, two of which were exhibited; the four weighed ten pounds.

Dr. J. W. Corrigan reported a case of caries of the first molar in a horse, the cavity connected with the nasal cavity. If the nostrils were closed the horse breathed through his mouth.

When he drank, the water escaped through the nostril. The cavity was cleansed and filled with a composition, which hardened firmly and perfected a cure.

Dr. Corrigan also read the following report:

GLASS EYE FOR A HORSE.

"Last spring a client had a very fine pony, which while eating punctured the cornea, with a nail that was in the side of the manger, allowing the humors of the eye to escape. A portion of the iris also came through the wound. I was called to see what could be done; decided to cut off a portion of the exposed iris and allow remaining portion of the eyeball to granulate and see how it would end. The result was a red, sunken mass where the eyeball should be and a corresponding shrunken condition of the eyelids. In looking at it the other day, I became imbued with the idea of a glass or porcelain eye. Getting the assent of the owner to try one, I sent to an instrument house, describing the other eye as nearly as possible as to color, and to-day the eye came. It fitted beautifully and at a casual glance would puzzle a professional to tell the false eye. I merely inserted it inside the lids over the membrana nictitans, and I do not know when I have done such a satisfactory (to me, at least) job, as before the pony was a sorry sight, and now can go into a show ring. I have seen many good horses with one bad eye sacrificed, but I shall try the glass eye in these cases if I get the chance, and would advise others to try the same scheme."

Dr. Lefler then spoke on lead poisoning, citing a number of cases that he had had in his practice; also a case of santanine poisoning.

Dr. Smith reported a case of arsenic poisoning.

Dr. Nodyne read an essay on "The Dog, Man's Most Faithful Friend."

Dr. L. R. Webber spoke on purpura hæmorrhagica; had used the antistreptococcic serum faithfully with unsatisfactory results, and had gone back to the old line of treatment—quinine, iron, chlorate of potash, and turpentine. Dr. J. Moore had gotten good results from the use of adrenalin chloride.

Dr. A. Geo. Tegg spoke on lymphangitis, having treated a great many cases during the past six months; he had examined them carefully, and only in one case of acute lymphangitis could

he find any wound or indication that it was due to wound infection.

Dr. E. H. Nodyne thought 90 per cent. of his cases resulted from dietetic troubles, and the other 10 per cent., from wound infection, the cases of infection being clearly indicated by the acute inflammation and tenderness, beginning at the point of infection.

Dr. John O. Moore spoke on lacerated wounds of the tendinous sheaths.

Dr. Carr Webber spoke on castration.

Dr. A. Geo. Tegg reported a case of a horse showing decided brain symptoms from pus in the frontal sinus. Trephining gave immediate relief.

Dr. Carr Webber had a case of meningitis in a cow. Post-mortem showed it due to infection through a wound in nasal cavity.

Receipts of meeting \$36. This was the most successful meeting of the Association. There were three applications for membership. Meeting adjourned to meet again in January.

J. H. TAYLOR, *Secretary*.

NEW YORK STATE VETERINARY MEDICAL SOCIETY.

The annual meeting of the New York State Society will convene at the Academy of Medicine, 17 W. 43d Street, New York City, on Tuesday, Sept. 24, at 10 o'clock and will be called to order by President W. L. Williams. A few words of welcome to Gotham will be expressed by President Bell, of the Veterinary Medical Association of New York City, whose guests the State Society will be. It is expected that the business of the Society, reports of committees and county secretaries will consume the major portion of the first day.

The second day's session will convene at the New York Zoological Park, 183d Street and Southern Boulevard, and if the weather is agreeable the meeting will take place upon one of the shady lawns; if it be unpropitious, in one of the well adapted halls. The literary program will then be taken up, and, although the REVIEW has not been informed of all the papers that are expected, Secretary Stone has supplied us with

enough to insure a season of great profit and interest to veterinarians in whatever field they may labor. Some of the subjects and essayists are as follows:

"Mallein vs. the Agglutination Test," Dr. H. D. Gill, New York City. Autopsies and Pathology, by Dr. W. Reid Blair.

"Notes on Tuberculin Test," Dr. H. D. Gill.

"Dairy Inspection," Dr. W. G. Hollingworth, Utica, N. Y.

"Control of an Anthrax Outbreak," Dr. S. H. Burnett, Ithaca, N. Y.

"Milk as a Human Food," Dr. Claude D. Morris, Binghamton, N. Y.

"Toxins and Antitoxins," Dr. V. A. Moore, Ithaca, N. Y.

"Resection of the Flexor Pedis Perforans Tendon for Infected Navicular Bursæ," Dr. Ray W. Gannett, Brooklyn, N. Y.

"Experiences with the Agglutination Test in Large Outbreaks of Glanders," Dr. George H. Berns, Brooklyn, N. Y.

It is expected that Dr. Leonard Pearson, State Veterinarian of Pennsylvania, will be present and address the meeting at one of the sessions.

This Society has gained a world-wide reputation for the excellence of its clinical demonstrations, and it is confidently anticipated that the clinic of 1907 will equal or excel any that have preceded it. The large Veterinary Hospital of the Fiss, Doerr & Carroll Horse Company, 24th street, near Third avenue, has for the third day been placed at the disposal of the Society. Dr. J. Elmer Ryder, veterinarian of this extensive establishment, is a member of the Local Committee of Arrangements, and, assisted by a number of the most prominent practitioners of the city, abundant material of the most interesting and valuable kind will be provided for the occasion. An effort will be made to demonstrate only those operations which are most useful in practice, and will be undertaken by surgeons whose experience and success qualify them.

While it is not necessary here to give details of the social features of the meeting, it may be stated that veterinarians who bring with them lady members of their families may be assured that their pleasure and comfort have been well anticipated.

B. A. I. VETERINARY INSPECTORS' ASSOCIATION OF CHICAGO.

At the regular monthly meeting of this Association, held July 12, Dr. W. M. Cummins described in a very interesting

paper the character of work an inspector has to perform on the range in eradicating as well as in preventing the spread of scabies in sheep. Although nothing especially new was brought forward, the doctor presented from his actual experience in the field some facts well worth remembering for an inspector, whose future duties may be along this line of work.

Dr. M. Guillaume, in behalf of the Committee on Food-Hygiene, gave a very interesting sketch of how milk inspection is carried on in a large city like Chicago. There is evidently a great field for improvement in this branch of public hygiene; and a milk inspection, short of compulsory testing with tuberculin of all herds contributing to a city's supply, is, in the doctor's opinion, very inadequate, to say the least.

* * *

The August meeting was held on the 9th. Dr. A. L. Faunce, for the Committee on Food-Hygiene, presented a paper treating of oleomargarine as a foodstuff. The doctor gave a short history of how it is manufactured and its use as a substitute for butter, and seemed to be of the opinion that when wholesome oleomargarine in many instances is preferable to butter, especially when compared to the poorer grades of the latter. In the discussion following, Mr. Morris very ably described the various tests, household as well as chemical, and in differentiating the two products; also several methods by which the presence of coloring agents could be detected.

Dr. Sigmund read a short paper on "Traumatic Pericarditis."

J. MASSEN, *Secretary*.

MICHIGAN STATE V. M. ASSOCIATION.

At a meeting of representative members of this association, held at Detroit on July 24th, it was decided to dispense with the summer meeting this year, for reasons that will be made known at the next annual meeting, which will be held at Lansing, Feb. 4 and 5, 1908.

THE OKLAHOMA V. M. ASSOCIATION

will hold its annual meeting at Shawnee, on Sept. 19, and Secretary Martin extends an invitation to all home and neighboring veterinarians, as a good program has been arranged.

NEWS AND ITEMS.

DR. F. W. WESTON, Dickinson, N. D., died May 30.

E. J. ROBBINS, D.V.S., Bay Shore, L.I., is Secretary of the Willow Brook Driving Park, Islip, L. I.

R. J. BOSE, D.V.S., Troy, N. Y., sailed for Paris the latter part of July.

DR. AND MRS. NELSON P. HINKLEY, of Buffalo, N. Y., celebrated the twenty-fifth anniversary of their wedding, at Glen Rose Farm, West Falls, N. Y.

HOW FIDO GOT INDIGESTION.—Bess: I can't ride. I'm ill. I've sent for a doctor. Flossy: Not that handsome one Fred pointed out to us yesterday? Bess: Yes. He's coming directly. Flossy: Then, you just tear into your clothes and feed Fido the cake and jam he'll eat. *That doctor is a veterinary.*

PROSECUTING AN ILLEGAL IN MANITOBA.—At Crystal City, on Friday, July 26, Frederick Watkinson was convicted before Police Magistrate Colter of practicing as a veterinary surgeon without the necessary qualifications. As this was his second offence, he was fined \$50 and costs, or one month in jail. The Veterinary Association of Manitoba gave the information.

MRS. ADOLPH LADENBURG, a wealthy New York society woman, fond of animals, has imported some "Kerry" cows from Ireland, and will breed them on her Long Island estate. They are native of the mountainous sections of Ireland, are no larger than Shetland ponies, will live on food that would starve other breeds, and are said to reproduce their own weight in milk fifteen times yearly, while the large breeds only give about five times their weight.

WILLIAM PALLIN, F.R.C.V.S., of Athgarvan Lodge, County Kildare, Ireland, died in London, June 8, 1907. He graduated from the Dick Veterinary College, Edinburgh, in 1863, became Vice-President of the Royal College of Veterinary Surgeons, a Fellow in 1896, and Examiner in Veterinary Hygiene in 1898. He practiced for a while and then entered the Army in 1871, serving until the close of the Boer War, when he resigned and devoted his time to his Irish estate, where he was an extensive breeder of race-horses.

THE BRITISH ARMY VETERINARY SERVICE.—The REVIEW will publish in its next issue the report of Veterinarian Coleman Nockolds to the Adjutant-General of the U. S. Army, on the organization and conduct of the British Army Veterinary Department. It is a thorough analysis of the subject, and Dr. Nockolds takes occasion to make some important recommendations for the betterment of the service in our own Army. He shows that the weakest link in the chain is the absence of rank, which destroys authority and position.

A RECORD LIVER AND SPLEEN.—While the great and lamented "Sysonby" held the record as a speedy race-horse and winner of purses, it appears that he does not hold the record for the size of his liver, for while that organ in the great thoroughbred weighed 65 pounds, an Ohio horse has quite eclipsed this. At the January meeting of the Ohio State Veterinary Medical Association, Dr. F. E. Anderson, of Findlay, reported the holding of a post-mortem upon a horse whose liver weighed 105 pounds and whose spleen weighed a little over half as much. Details may be found in this number of the REVIEW in the department of "Society Meetings."

LICENSED TO PRACTICE VETERINARY MEDICINE IN THE STATE OF NEW JERSEY.—Dr. William Herbert Lowe, President of the State Board of Veterinary Medical Examiners of New Jersey, advises the REVIEW that the following gentlemen successfully passed the recent State Examinations and have been duly licensed to practice veterinary medicine in the State of New Jersey:—Francisco P. Boulanger, D.V.S., New York University, N. Y. A. V. C., Union Hill, N. J.; Ronald W. Butterworth, D.V.S., New York University, N. Y. A. V. C., North Haledon, N. J.; Harold N. Guilfoyle, D.V.S., U. S. College of Veterinary Surgeons, Norwood, Pa.; Oliver T. Hendren, V.M.D., University of Pennsylvania, Roxborough, Philadelphia, Pa.; William A. Haines, V.M.D., University of Pennsylvania, Bristol, Pa.; Lambert Rudolf Albert Iskraut, D.V.M., Royal Veterinary High School, Hanover, Germany, Fort Lee, N. J.; Charles Labash, D.V.S., Kansas City Veterinary College, Passaic, N. J.; Walter G. Morehouse, D.V.M., Cornell University (N. Y. State Veterinary College), Asbury Park, N. J.; Chas. C. Schloemer, V.M.D., U. of Pa., New York City; Frank A. Wright, V.M.D., U. of Pa., Mount Holly, N. J.

VETERINARY MEDICAL ASSOCIATION MEETINGS.

In the accompanying table the data given is reported by many Secretaries as being of great value to their Associations, and it is to be regretted that some neglect to inform us of the dates and places of their meetings.

Secretaries are earnestly requested to see that their organizations are properly included in the following list:

Name of Organization.	Date of Next Meeting.	Place of Meeting.	Name and Address Secretary.
American V. M. Ass'n.....	Sept. 10-13, '07..	Kan. City, Mo.	R. P. Lyman, Hartford, Ct.
Vet. Med. Ass'n of N. J.....	Jan. 9, 1908.....	Trenton.....	W. H. Lowe, Paterson.
Connecticut V. M. Ass'n.....	1st Tu. Feb.....	Hartford.....	B. K. Dow, Willimantic.
New York S. V. M. Soc'y.....	Sept. 24, 25, 26.....	New York C'y.	G. T. Stone, Middletown.
Schuylkill Valley V. M. A.....	Dec. 18, 1907.....	Reading.....	W. G. Huyett, Wernersville.
Passaic Co. V. M. Ass'n.....	Monthly.....	Paterson, N. J.	H. K. Berry, Paterson, N. J.
Texas V. M. Ass'n.....	Call Exec. Com.	E. L. Lewis, Waxahachie.
Massachusetts Vet. Ass'n.....	Monthly.....	Boston.....	F. J. Babbitt, Lynn, Mass.
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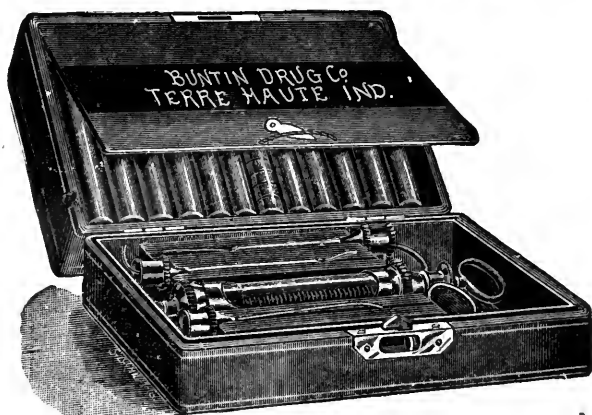
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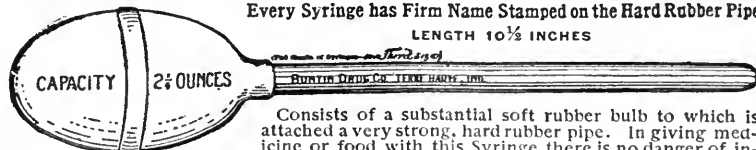
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137	Morphine Sulphate.....	2 gr. 40
138	Morphine Sulphate.....	2 1/2 grs. 50
155	Morphine Sulphate.....	3 grs. 60
109	Morphine and Atropine.....	45
	{ Morphine Sulph..... 1 1/2 grs. }	
	{ Atropine Sulph..... 1/2 gr. }	
139	Morphine and Atropine.....	45
	{ Morphine Sulph..... 1 1/2 grs. }	
	{ Atropine Sulph..... 1/2 gr. }	
140	Morphine and Atropine.....	50
	{ Morphine Sulph..... 2 grs. }	
	{ Atropine Sulph..... 1-4 gr. }	
141	Morphine and Atropine.....	60
	{ Morphine Sulph..... 2 1/2 grs. }	
	{ Atropine Sulph..... 1-4 gr. }	
142	Nitroglycerine.....	1-10 gr. 14
143	Nitroglycerine.....	1-5 gr. 17
110	Pilocarpine Muriate, Crystals.....	1-2 gr. 55
144	Pilocarpine Muriate, Crystals.....	1 gr. 90
145	Pilocarpine Muriate, Crystals.....	1 1/2 grs. 1 10
111	Sodium Arsenite.....	1 gr. 12
112	Strychnine Sulphate.....	1-4 gr. 12
147	Strychnine Sulphate.....	1-2 gr. 13
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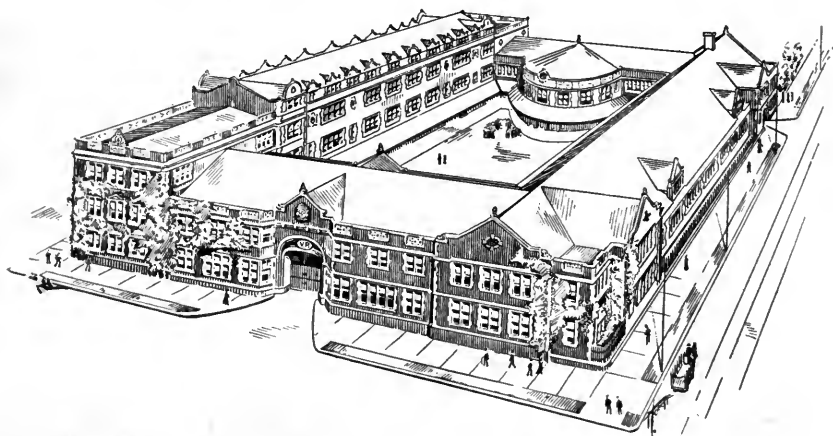
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